



# **LAW AND ECONOMICS ON ILLEGAL TRADES**

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**VNU-HCM PRESS - 2022**



# Law and Economics on Illegal Trades

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## PREFACE

The Trans-Pacific Partnership (TPP), which Japan has led, is working effectively, in contrast to the World Trade Organization (WTO), which has not worked well for some time and has many problems with respect to China. In terms of intellectual property rights, legislation in China that favors domestic companies is often criticized by foreign plaintiffs, and the US and other developed nations have accused the Chinese government of IP theft by using spies and computer hackers. Under a bad economic situation such as that caused by the Covid-19 pandemic, the number of crimes tends to increase. In this century Asia, including India, will be the center of the world economy, but in this area, developed, emerging, and developing nations among which illegal trade takes place coexist. To prevent such trade is a key factor for sound and sustainable economic development in the long run.

In this book we consider illegal trade from a Law and Economics perspective, which institutionally, empirically, and theoretically analyzes laws, based on economic rationales. Behind illegal behaviors and crimes, we can often see individual incentives to break laws for individual economic benefits. Unlike the emotional crime of homicide, illegal trades are always involved in and explained by their incentives. Though laws are necessary to enforce and crack down on crime, lawmakers often are weak in the analysis of economic rationales. Nonetheless, economic analysis of the effects of laws on buyers and sellers is necessary in order to make effective laws and to enforce them effectively. This book explains phenomena in real marketplaces and analyses them by using theoretical models.

This book consists of five chapters. Chapter 1 addresses counterfeiting in food industries from an institutional viewpoint. The approach to considering this problem is unique, using interviews with stakeholders at real marketplaces in Southeast Asia. It first analyzes food smuggling with concrete examples obtained from field research, and indicates how the division of labor among countries takes place and is affected by differences in the levels of law enforcement within the region. Second, it shows where incomplete information

on food quality is caused within a supply chain and explains why believing that only final consumers are deceived is wrong. Sometimes retailers and/or wholesalers are deceived, depending upon food characteristics. Third, it explains why lawful look-alike processed food is widespread in Asia. An original food maker first producing a new type of food cooperates with a processing machine maker, which usually has a patent on specific machines. Since the machine maker can export its product overseas, foreign food makers can easily produce look-alike processed food by importing the machine.

Chapter 2 theoretically analyzes the phenomenon of look-alike food using a biological analogy. Biological mimicry is a key phenomenon in evolutionary theory and is explained by negative and positive frequency-dependent selections. We see similar phenomena in human society and often buy imitated and look-alike products in the marketplace. For fair competition we have created a design right among intellectual property rights, but judging infringement of the right can be vague, and therefore controversial, in courts. Using Dixit-Stiglitz's CES utility function, this chapter proves that a relatively high (low) fixed cost causes a socially excessive (insufficient) entry when producers maximize profits in Müllerian-type look-alike markets, where positive mutual externalities can create benefits for both consumers and producers. It also proves that any entry by fake producers should be prohibited and that a high fixed cost for original producers creates a high incentive for fake producers in Batesian-mimicry-type imitation markets. These results should affect judgments of design right infringement.

Chapter 3 proposes a simple framework consisting of a law enforcement model in which criminal organizations (mafias) can resort to the use of violence to monopolize an illegal market. Within this framework, it investigates the economic incentives of criminal organizations in two different situations: monopolistic control of illegal markets with violent conflict or peaceful control with duopolistic criminal organizations without violent conflict. Depending on the imbalance of power in violent conflicts and asymmetrical enforcement differences between monopolistic and duopolistic markets, the overall incentive of criminal organizations to engage in violent conflict varies.

Chapter 4 considers the problem of counterfeits in E-commerce in China and offers a reason why the online market has become the main place for counterfeit trades. Through a platformer, Pinduoduo, which has attracted attention in recent years because of frequently selling counterfeits, this chapter analyzes behaviors of consumers and retailers in the process of online counterfeit sales and obtains a strategy for Pindoudou to compete with incumbents.

Chapter 5 addresses the importance of branding using geographical indications for Vietnamese agriculture as the nation has transformed from a centrally planned economy to a free market. From a poor and destitute country, Vietnam has become a major agricultural exporter. However, global awareness of Vietnam and Vietnamese agriculture has not increased appreciably over the years, since Vietnam still mostly exports raw materials. Research exploring the transformation process and building international brand awareness of Vietnamese agricultural products is of great significance for Vietnam's economic development, as such research provides a basic foundation upon which to create suitable development schemes. It can also offer suggestions for implementing successful branding of Vietnamese agricultural products, thus promoting exports and driving growth towards humanistic values for a Vietnamese society in which more than 60 percent of the population is living in rural areas. This chapter also offers considerations of such issues that may be useful to other developing countries dependent on agricultural industries.

Contributors in this book presented papers at the conference Law and Economics on Illicit Trades, held at Waseda University in October 2021. Comments and discussions there were very helpful in improving our manuscripts. Most contributors had also met and discussed issues at conferences and done research together in the past, which contributed to frank and earnest discussions among us. The topics picked up in this book do not comprehensively cover the problems of illegal trade, but focusing on problems specific to emerging and developing countries in Asia should be beneficial not only for researchers but also for businesspersons, lawmakers, and policymakers who strive to stop illegal trade.

*Koji Domon and Tran Dinh Lam*

## **Acknowledgements**

We would like to offer appreciation for comments on our manuscripts from Dennis Khong and Tadashi Kikuchi and for the support of Sai Thi May for the publication. To publish the book, we were also financially supported by JSPS KAKENHI (Grant Number 20K01716).

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## Chapter 1

# An Institutional Economic Analysis of Fake and Look-alike Food Markets in Southeast Asia

*Koji Domon, Michael Yuan, and Tran Dinh Lam*

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## 1. INTRODUCTION

The recent popularity of Japanese food has created illicit markets in Asia. This phenomenon has been noticed by producers and distributors, but the reality and rationales behind it have not been unraveled. I show and analyze the phenomenon from an economic perspective, based on field research performed in 2013 and 2014. Areas my research group visited were around the borders, metropolitan areas, and tourist spots<sup>1</sup>. There have been many reports<sup>2</sup> on fake transactions in Asia, and the center is China, producing about 80% of fake products in this area, as well as exporting them around the world (Ohkuma, 2013). However, most reports have mainly addressed only the damages experienced by intellectual property (IP) holders.

We will consider how IP right infringers react to and effectively avoid enforcement by authority and what is happening in the actual marketplaces of Japanese food<sup>3</sup>. Behind the consideration we see differing economic rationales for making profits from illicit trades. These rationales are not often so important to IP holders, who merely think about injunctions and compensation from infringers in the courts, but authorities must consider them if they strive to stop infringements. However, watching developing countries in Asia, including

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<sup>1</sup> Our group did field research on illicit markets in Ho Chi Minh City, Bangkok, Kuala Lumpur, Singapore, and Jakarta in December 2013, and on smuggling at borders between Thailand, Myanmar, and Laos, Singapore and Indonesia, and Vietnam and China in February 2014. In addition, we did field research on Japanese restaurants at Hanoi, Ho Chi Minh City, Nha Trang, Bangkok, Jakarta, and Bali from July to September 2014.

<sup>2</sup> JETRO (<https://www.jetro.go.jp/world/asia/asean/ip/>) provides and updates several reports on IPR infringements in Asia.

<sup>3</sup> We present many cases we heard reports of in the field research in the Appendix.

China, we sometimes question whether local authorities and governments have a real incentive to prevent infringement, since most infringements do not cause domestic damage due to local production of the copies of foreign products. When domestic industries are fostered or damaged by IP rights infringement, local authorities must take enforcement action quite seriously<sup>4</sup>.

Fake food has different characteristics from industrial fake products (Higgins and Rubin, 1986) like bags, watches, music content, and so on. It is difficult for most foreigners to realize an authentic Japanese taste outside of Japan since they seldom have a chance to eat authentic Japanese food. When they first eat Japanese food without experience, they think that it is authentic, although in most cases they are experiencing a localized taste. This characteristic is similar to that of credence goods (Darby and Karni, 1973), which consumers cannot judge regarding quality even after eating them. Only when foreigners are accustomed to authentic Japanese food, for example, by often having it in Japan or in an expensive local restaurant with a Japanese chef, can they realize the authenticity, making such foods so-called “quasi-credence goods” (Domon, 2018). Another characteristic of fake food concerns the IP rights by which original products are protected and producers are given exclusive rights for a certain period. For industrial products, a patent is a crucial right to produce an invented product, but in food industries, this is not effective due to information dissemination after registration. Because watching and enforcing against infringement and obtaining patents are difficult (Suzuki, 2014), most producers hide information on how to make foods as trade secrets. Other IP rights, such as trademarks, copyrights, and design rights, are necessary rights to protect original food, and in most cases fake food infringes these rights.

Our discussion proceeds as follows. Section 2 considers economic rationales for food smuggling depending on transportation costs, apprehension

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<sup>4</sup> The Special 301 Report annually published by the Office of the United States Trade Representative (USTR) has an impact on authorities in developing and emerging countries where IP rights infringement is widespread. In particular, the list of Notorious Markets indicates concrete names of companies responsible for infringements. The authorities pressured by the investigations cannot neglect such reports.

risk, and differences in the enforcement levels between countries. Section 3 shows how situations of incomplete information on quality arise in the distribution process, depending upon the characteristics of fake products, consumer types, and counterfeiting techniques. Section 4 addresses a vertical industrial structure of look-alike food. In the structure it is difficult for original producers to prevent a food processing machine from spreading to other producers and countries. That results in the emergence of look-alike food. A final section concludes the outcomes of this chapter and mentions extensions of its concepts.

## 2. FOOD SMUGGLING

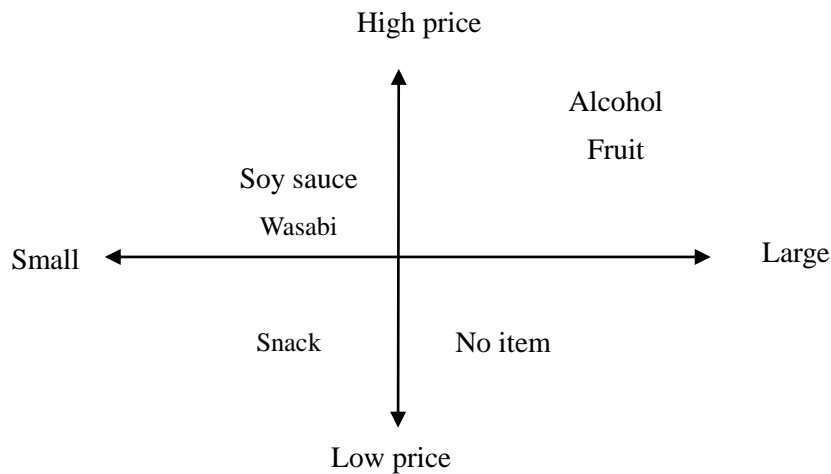
In field research, we can see three types of supply chains in fake food markets. The first supply chain is domestically completed. In this case, food is produced within the country and sold by using a fake label and packaging, which are also produced by a domestic company. Second, foreign suppliers export fake final food products. The center of fake production in Asia is China, from which we can see plenty of fake food exported to neighboring countries. The third supply chain lies beyond borders. A typical case is precise fake packages made in China, smuggled to neighboring countries, and combined with local or imported materials.

Before considering the above supply chains, it should be noted that smugglers manage to effectively make profits depending on the type of food, and that the most profitable goods are small and high-priced foods due to low transportation costs and low detection rates by enforcement. Since food is cheaper than luxurious and expensive small items, size and weight are crucial in smuggling. Regarding Japanese food, the most profitable type seems to be Japanese liquor, like saké. There are two kinds of smuggling at alcohol markets. One is authentic alcohol, evading a tariff<sup>5</sup>, which is supplied mainly for local

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<sup>5</sup> According to an interview at a small shipping company with 7 employees at Batam, an Indonesian island just below Singapore, Singapore seems to strictly inspect goods but this does not actually seem to be the case. Police know about the smuggling activity, but do nothing. This is due to the fact that

Japanese customers in restaurants and bars. The price of legitimate imported alcohol is twice or three times higher<sup>6</sup> than in Japan because of high tariffs. The other is fake Japanese alcohol for local consumers who cannot realize authenticity. A typical method to produce this type is to pour fake contents into an original or counterfeit empty bottle. Such alcohols are mainly supplied for small local retailers, restaurants, and bars<sup>7</sup>, since they are easily detected when sold at major retail markets like chain supermarkets<sup>8</sup>.



**Figure 1.1. Profitability of Japanese food for smugglers**

Another example is soy sauce and sweet cooking rice wine with a high demand, used for cooking Japanese meals. Singapore, a hub for seaports in southeast Asia, has many wholesalers exporting Japanese seasonings to Indonesia, Thailand, Malaysia, etc., cheating suppliers of restaurants and often

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the corrupted customs officials bribe the police. In the company, the majority of products (80%) are goods for smuggling, while 20% are official. See Appendix A-1-7.

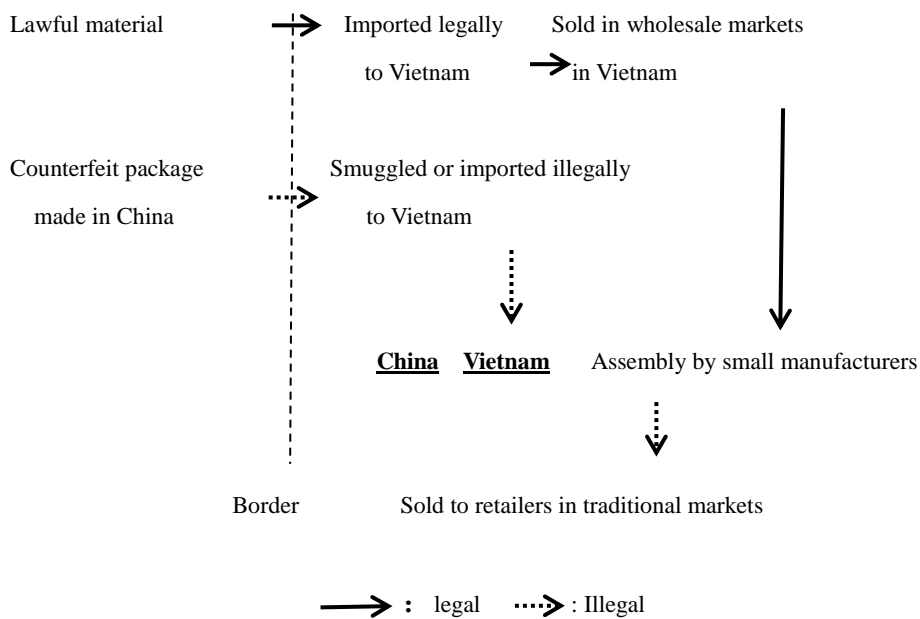
<sup>6</sup> See the website, <https://www.jetro.go.jp/industry/foods/notice/e677cd2ac372fb1e.html>. According to data in 2018, the prices of saké in Taiwan and in China are, respectively, approximately three and four times as high as in Japan. And also, see Appendix A-1-4.

<sup>7</sup> According to an interview at a Japanese restaurant (Izakaya: Japanese bar) in Bangkok, a Thai staff member bought a bottle of whisky and its price was half the usual price. The next morning, he suffered a severe headache. There are many fake liquor beverages in Bangkok, including Japanese saké. See Appendix A-3-4, A-2-8, and A-2-10. However, he said that his restaurant was using cooking saké, mirin, produced in Vietnam, and its quality was acceptable.

<sup>8</sup> See <https://theaseanpost.com/article/death-fake-alcohol>.



selling them counterfeits of Japanese foodstuffs. This counterfeiting is often detected by chefs after distribution to restaurants. Local suppliers usually have reliable foreign wholesalers, but often order from others when their foodstuffs are out of stock<sup>9</sup>. There is also a trick to evading tariffs by exchanging a package of a name brand product for a generic package. Since restaurants do not need original packaging, but only the contents, an exporter of Japanese ingredients, for example, in Singapore, sells them at a lower price than other originals due to lower tariffs<sup>10</sup>. In this case, except for the authorities, there is no damage for any party including original producers and customers.



**Figure 1.2. Production process of illegal MSG beyond borders**

<sup>9</sup> In Jakarta we saw a small wholesaler dealing in Japanese ingredients for local restaurants, who had a fake Japanese cooking saké, mirin, imported from Singapore. The owner said that he was sometimes cheated by exporters in Singapore. He also explained the story here mentioned to. See Appendix A-1-1.

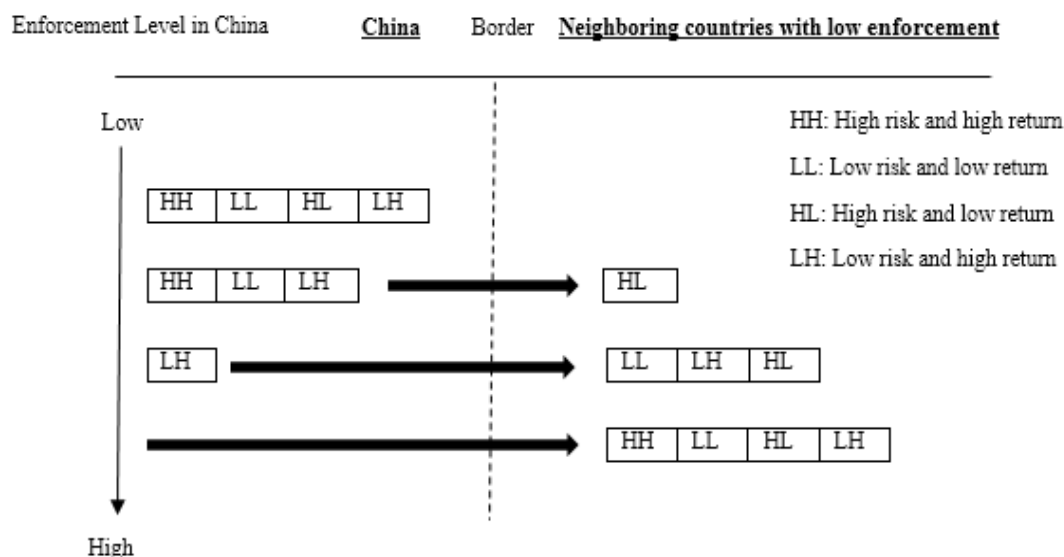
<sup>10</sup> According to a Japanese manager of a Japanese chain restaurant in Jakarta, a cheap 10 USD Japanese alcohol in Japan was priced at 80 USD, with an added 20% margin, at his restaurants due to a high tariff. See Appendix A-1-4.

At land borders between China and neighboring countries, many fake soy sauces and other seasonings are also smuggled from China through mountains where local police cannot easily detect and enforce against them<sup>11</sup>. Smuggling is affected by enforcement levels at both upstream industries and the place of origin. For example, since Chinese authorities have reinforced enforcement, counterfeiters of MSG (monosodium glutamate, a chemical seasoning) face a risk in producing final fake products if they sell them at home or smuggle them to other countries. To avoid this risk, counterfeiters produce a specific part of the fake food that is difficult for authorities to detect. Another plausible reason for this may be a low profitability of producing the final product due to high labor costs. Specialization in a high-value added part can be more lucrative than producing the final product. A key part for fake food like MSG is not the contents itself, but a package copying an original, which is necessary to cheat consumers and easy to smuggle between borders<sup>12</sup>. Counterfeiters in neighboring countries import and use such packages to produce a final fake product with lawful content. The final product is not sold at chain supermarkets or other modern markets but at traditional markets where small retailers have a narrow space to display goods.

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<sup>11</sup> The most notorious area in Vietnam is Lang Son, near Hanoi, where there are three border gates between Vietnam and China. Among them, Xin Qing Border Gate and its mountainous areas have several smuggling routes at which smugglers carry baggage from China to Vietnam, almost all one-way. We could see many small warehouses on both sides whose owners contacted one another by cellphone, but we could not enter the smuggling routes, which even local police could not control. See Appendix A-2-2.

<sup>12</sup> According to staff of a major MSG company, a fake package is always produced soon after the company changes packaging to prevent counterfeiters from copying it. Counterfeiters in Vietnam import the fake package from China and put MSG, which they can easily buy at local markets, into it. The MSG, a chemical material produced in China, South Korea, Taiwan, etc., is not fake. MSG to make Asian meals delicious is a necessary seasoning for every home and restaurant in Southeast Asia. See Appendix A-2-1.



**Figure 1.3. Relocation of unprofitable sectors by risk of enforcement**

As described in Figure 1.3, when a fake product is composed of several parts including illegal ones, counterfeiters in China can export profitable parts of illegal final products to neighboring countries in order to avoid the risk of smuggling the final products. The most profitable part is a low-risk and high-return one, like a thin vinyl package. This kind of illegal part is used in order to complete the product in neighboring countries. Figure 1.3 shows four kinds of parts classified by the risk of enforcement: high-risk and high-return (HH), low-risk and low-return (LL), high-risk and low-return (HL), and low-risk and high-return (LH). Production can be distributed beyond borders in terms of risk and return, depending on the level of enforcement. Under no or almost no enforcement, China is the best place for fake productions in Asia, since this country has factories producing all kinds of parts. However, along with the level of enforcement in the country, counterfeiters shift risky sectors of production to other countries with a lower level of enforcement. The shift first takes place in a sector of high-risk and low-return (HL), then moves to HH and/or LL, and LH<sup>13</sup>.

<sup>13</sup> These shifts are seen in industries causing environmental pollution. An industry relocates portions of production that heavily pollute the environment to developing countries with lax environmental

### 3. INCOMPLETE INFORMATION AMONG SUPPLIERS, RESTAURANTS, AND RETAILERS

Each country that we investigated has a few major suppliers (importers and wholesalers). Local major suppliers of authentic Japanese food, who have done business for a long time, are facing severe competition from small suppliers dealing in imported fake Japanese foodstuffs, and losing profits. Since most local customers in cheap restaurants are not familiar with authentic Japanese food, it is difficult for them to distinguish authentic from fake tastes. Small suppliers, who can be contacted only by cellphone and deal in fake food, directly visit small restaurants to get orders. Due to low prices, there is demand for such foodstuffs, and a resultant decreasing demand for authentic ones<sup>14</sup>. Unlike an adverse selection in which consumers realize the quality of a product after purchasing, local customers who cannot distinguish an authentic taste from a fake one allow suppliers who deal in fake low-quality products to survive and compete with suppliers of original products in the market.

**Table 1.1. Situations in which incomplete information arises**

	Seasoning	MSG	Counterfeit label
Supplier	Y	Y	N
Retailer or restaurant	Y	Y	N
Local customer	N	N	Y
Japanese customer	Y	N	Y

*\* Y: Complete info. N: Incomplete info.*

We could see several types of incomplete information about authenticity<sup>15</sup> in the distribution process of food, in terms of who is cheated, as indicated in

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regulations. Due to strict laws or regulations, industries relocate factories to other countries in order to make profits, whether they are lawful or not.

<sup>14</sup> According to a major supplier dealing only with original food products for hotels and expensive restaurants in Hanoi, the staff see very cheap Japanese ingredients, seasonings, and fish for sashimi, which may be fake, in small restaurants that compete for their business. See Appendix A-2-7.

<sup>15</sup> Unlike genetically modified organisms, which are pure credence food, incompleteness of food quality information or authenticity is complicated in supply chains or vertically integrated food industries. Vetter and Karantininis (2002) theoretically considered a simple case of credence food, but the real

Table 1.1. Since fake producers generally do not sell their food directly to final consumers, which stages in the distribution cause incomplete information about products depends on food characteristics. As explained about fake soy sauce, fake seasonings easily cheat local customers, as well as suppliers and retailers who cannot taste before sales. Among seasonings, MSG is a perfect chemical food for cheating by using a sophisticated package that can only be detected by staff of the original company. In this case, even Japanese customers cannot notice a difference in quality between the fake and an original food, while the producer, supplier, and retailer all know whether they dealing with a fake or not. Another type of cheating is a counterfeit label<sup>16</sup> with a changed expiration date or place of origin. This kind of food is dealt with by a cheaper suppliers and retailers who do not often know the quality of the product, though some customers notice the bad quality<sup>17</sup>.

The problem of who cheats whom at a fake food market is not easy to answer, since it depends upon varying characteristics of the food. In general, final consumers think that retailers or restaurants cheat them, but, in reality, they might be also cheated by upstream market traders.

#### **4. A LOOK-ALIKE FOOD COMPETITION WITH AN ORIGINAL, BRANDED FOOD**

In marketplaces in Asia we see a lot of processed, look-alike food, and foreigners who have consumed the original food in their home countries for a long time experience a strange phenomenon. That is, the local look-alike food is

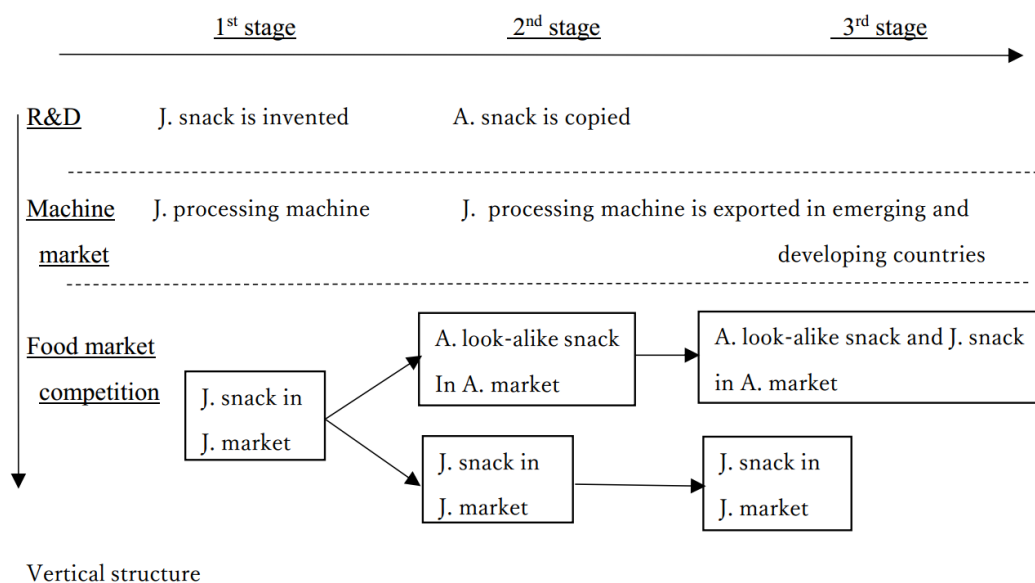
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conditions surrounding fake food are not so simple when we take the characteristics of quasi-credence foods into account.

<sup>16</sup> Credence food is considered in the context of regulations by labelling, which works by monitoring authentic foods or genetically modified organisms. This kind of consideration is rendered ineffective by fake labels, which we address here. See Golan (2001), Bonroy and Constantatos (2008), and Fulton and Giannakas (2004). Regarding problems of non-credible labels, see Anania and Nisticò (2004).

<sup>17</sup> According to the owner of a small Japanese restaurant that bought Japanese soy sauce from a wholesaler without an office by phone, he received complaints from Japanese customers because the taste of the soy sauce was strange. we heard the same story in Indonesia. That is, the phenomenon is common in Southeast Asia. See Appendix A-2-8.

more popular than the original product, and local consumers perceive that the original foreign food imitates the local one. This phenomenon is explained by the following facts. First, often original food makers had not entered foreign markets after offering a new food to their domestic markets, since profits in foreign countries were too small to enter the markets in earnest. Second, seeing the popularity of the new food in its original market, a foreign food maker imported facilities of production that were not patented by the original food maker, and offered look-alike food in the country. Local consumers began to eat the new food for the first time and became familiar with it, believing that it had been invented by a domestic company or imported from abroad. Third, when an original maker entered the markets in developing and emerging countries due to revised expectations of profitability, they found themselves newcomers, faced with competition from locally branded food similar to their original product.



\* J : Japanese、 A : Asian

**Figure 1.4. Vertical structure and competition of processed food production**

We can often see the above phenomenon in Asia, as shown by two examples of look-alike food competition in the snack food and the instant

noodle markets. In the 1960s, a Japanese maker released a new snack food with a unique taste and shape which is still popular and known by almost all Japanese. In Thailand we can see a look-alike food made by a Thai company in supermarkets and convenience stores. Thai customers think that the look-alike originated in Japan because of its Japanese name<sup>18</sup>. As a result, the original Japanese maker faces severe competition with the Thai snack food. The same thing has taken place in the instant noodle market. In the 1960s, these noodles were patented by a Japanese food maker, and either exported or licensed to foreign makers who localized the taste. Since the food processing machines were exported or locally produced, local makers have penetrated this market by localizing tastes in ways that were not easy for Japanese makers<sup>19</sup>. As a result, the maker that first invented this food has lost a market due to its late entry.

Figure 1.4 shows the process of market expansion in the three stages of food production. Like industrial products, processed food has a vertical production structure and generally cannot be produced only by a company. Among inputs, a food processing machine is a key element that is not generally invented by a food company. In the first stage, a new type of food requires invention of a processing machine, which is ordered from a machine manufacturer. Since the patent or knowledge to produce it is usually held by manufacturers, food companies cannot control manufacturers export of these food processing machines abroad. In the second stage, a foreign company notices the popularity of a new type of food and manages to produce it by importing a food processing machine. Even though she or he does not copy the original taste, a similar localized taste is enough to attract consumers. Without

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<sup>18</sup> According to interviews with two local subsidiaries of Japanese companies in Bangkok, they face the same situation as explained here. However, since Japanese makers use high-quality materials for production, they say that their food's tastes are differentiated from look-alike local foods. Both also recognized that it was difficult for them to control processed machine manufacturers that sell machines to other companies. See Appendix A-3-1 and A-3-2.

<sup>19</sup> In Indonesia the instant noodle market, in which local companies are major players, is larger than that of Japan. Local companies have produced a localized taste that the Japanese company that first invented the noodle was unable to produce, according to the staff. Thus, local companies obtained and keep a high market share. See Appendix A-1-3.

competition with originals, it is easy to expand the market because the popularity is already proved abroad. In the third stage, an original producer enters into a foreign market where the look-alike food already prevails. The producer is considered a newcomer by local consumers and must compete with incumbents.

In the food industry, it is difficult to protect originality by patent, since a recipe is generally not patentable. Trademarks, copyrights, trade secrets, and design rights for packages can protect original foods for a company first supplying a new type of food. However, an original producer as a newcomer abroad does not have such advantages over the first supplier. To prevent look-alike foods, a food company must hold patents for its food processing machines, but this is not easy in mass production industries<sup>20</sup>.

## **5. CONCLUDING REMARKS**

When considering concrete IP right infringements, we must take product characteristics into account. In economics there has been little research on IP rights infringements concerning food, though agricultural and food economics has considered food fraud as an element of food safety. In terms of deception, food safety problems are the same as IP rights infringement problems, but the former can be very vicious, as we saw in the crime of powdered milk containing melamine in China (Xiu and Klein, 2010), and such crimes must be seriously addressed and prevented at any price. On the other hand, IP rights infringements harm fair market competition, resulting in disincentives to invention. The enforcement level for IP rights infringements regarding foods depends on its cost-benefit ratio and effectiveness. This paper has considered the problems of fake food from an economic perspective, based on field research.

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<sup>20</sup> With a package maker, a Japanese snack food company invented a complicated box package that foreign makers found difficult to imitate. Staff at the branch in Bangkok said that look-alike food makers in Asia could produce similar contents but could not make the package. Consumers in Asia can easily identify the original Japanese snack food and are willing to purchase it even at a higher price than look-alike one. See Appendix A-3-2.



The results obtained here are summarized as follows. First, smuggling of fake food from China, a center for fake productions, is a common phenomenon in southeast Asia. The profitability of fake food production is affected by transportation costs, the prices of authentic foods, the levels of enforcement in related countries, and supply chains beyond borders. Second, since consumers prefer not to purchase or eat fake food, deception is necessary to the market. The problem of who deceives whom depends on the type of food and distribution channels. Cases exist in which final consumers are not deceived while retailers or wholesalers are deceived. Third, look-alike foods, which sometimes breach IP law, are created by using processing machines which original producers first invented. Exports of such machines make foreign food companies the first suppliers in their countries. That creates a disadvantage for an original maker to enter afterward.

These results could explain in detail the economic background of fake food trades, and the appendix presents some concrete examples to examine. However, whether they can be generalized by theoretical models or not must be tackled to provide a basis for meaningful consideration of IP law regarding infringements in developing and emerging countries.

## **Appendix: Interviews from field research on fake Japanese food<sup>21</sup>**

### ***A-1. Indonesia***

#### ***A-1-1. Distributor of Japanese food ingredients in Jakarta***

The owner worked as a chef in a Japanese restaurant in Dubai. He now owns his own food distribution company. He employs 5 people and supplies goods to hotels, restaurants, and kiosks.

There are two types of customers; hotels and restaurants catering to Japanese and westerners, and restaurants and kiosks catering to local

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<sup>21</sup> This appendix is a summary of field research notes containing detailed personal information and pictures unnecessary for academic discussions. Since the interviews contain information related to crimes, the summary hides any information which can identify persons or organizations.

Indonesians. Genuine Japanese food imported from Japan is supplied to the former market; Japanese food produced domestically or imported from China, Korea, etc. are sold to the latter market. Customers usually know the origin and quality of the foods. In Indonesia, Japanese food for Japanese expats or westerners is prepared according to the original Japanese cuisine. Japanese food for local people is adjusted to local tastes. As a result, the Japanese food for the local people does not require original materials and ingredients from Japan.

In the past one of his customers switched from one supplier to a competitor. He found out that the competitor offered much lower prices. However, he thinks that the competitor's food is not genuine, as it is supposed to be. The product involved is seaweed. The customer does not know which seaweed is genuine and only knows that they are different. In February 2013, he bought Japanese soy sauce from an importer from Singapore. His customers complained that the taste was different, and it was found that it was not genuine, and then he stopped the import from Singapore. After the complaint from his customer, the owner reported this to his importer, and but the importer did not show any responsibility. They just stopped doing business with each other.

After the interview, the owner took us to his warehouse, which is located at the back of his house. There are some products imported from Japan. According to the owner's statement, it is easier to fake big-sized items than small-sized items. Then, he showed us products inside their boxes. The owner showed us both the genuine product made in Japan and the fake Japanese one. One box with a white label was the genuine product imported from Japan, while another was a fake Japanese version. They looked similar but were slightly different in color.

*A-1-2. Owner of a Takoyaki (an octopus dish) restaurant in the outskirts of Jakarta*

The owner had spent more than two years in Japan, working as a manual laborer and as staff in restaurants. After returning from Japan, he worked in the

food business in Bali, where there is a large Japanese population. Then, he started his business in Jakarta.

His company employs a staff of 22. 60% of Japanese ingredients are imported from Japan, while the rest are obtained from Singapore. All meats are from Japan. The reason he gets some of his supplies from Singapore is that the Indonesian government limited imports after water leaked from Japanese nuclear power plants into the ocean. The supplies from Singapore are smuggled and cheaper. There is a small Indonesian island close to Singapore where the smuggling takes place. Japanese companies also pay the board of customs to deliver food to Indonesia with the aim of avoiding official taxes. Although there may be a risk that the supplies from Singapore might be counterfeits, customers and the proprietor can mostly know whether the supplies are genuine or fake. Some of the supplies bought through Singapore distributors are goods from China.

He thinks that consumers do not care about brand names or the origins of food, but focus on taste and price. Nonetheless, high-end restaurants care more about origins. He thinks that not all of the imported food is original. He also said consumers perceive that Japanese food is clean and tasty. Nowadays, demand for Japanese food is increasing. Japanese companies have set up factories to produce Japanese food in Indonesia. Indonesia also imports Japanese food made in Thailand, at about half the price of Japanese food from Japan.

He uses his kiosks mainly as a promotional tool for his distribution business (creating awareness among customers and promoting Japanese food in Jakarta) by participating at events and sponsoring competitions. The price of the food he sells at kiosks is higher than at other kiosks. He stated that he has made some changes in taste to fit the Indonesian palate. To do so, he uses certain local ingredients in his food. As far as price is concerned, a high price is possible because the raw materials and ingredients he uses are genuine and better in taste. In fact, his brand is already quite well-known. Furthermore, a high price may also indicate a higher quality to customers. There is competition in the Japanese food

distribution business. Some restaurants whose owners are Japanese tend to only use genuine Japanese raw materials, while others use fakes.

#### *A-1.3. Japanese instant noodle company in the outskirts of Jakarta*

The company started with the invention of instant noodle products in 1958, dealing in them all over the world. Sales per year in some of the markets are 42.47 billion pieces in China, 14.5 billion pieces in Indonesia, 5.5 billion pieces in Japan, 2.06 billion pieces in Russia, and 4.03 billion pieces in the US. The profit margin in Japan is much higher than in Indonesia, because the selling prices in Japan are much higher. The main source of cost differences between operations and production in Japan and Indonesia is raw materials, because the manufacturing process is heavily mechanized, automated, and capital-intensive. The machines used in Japan are the same as in Indonesia. Thus, the main business strategy in Indonesia is to increase volume.

The package is designed internally in the company. The cup type of noodles, the flagship product, is determined by the headquarters in Japan, and cannot be changed in Indonesia. There are four soup flavors for the noodles. The product positioning of noodles can be described on a plane and perceptual map, which consists of two axes, of style (from conservative to modern) and price (from US\$1 low to high US\$2).

Because the tastes of consumers are determined by what they have eaten before, creating new flavors and brands is difficult. The brand in Japan matters little to consumers in Indonesia. In other words, brands that may be famous in Japan have to start from almost zero upon entering the Indonesian market.

#### *A-1-4. Manager of a restaurant group in Jakarta*

The company is a food and beverage business group started 26 years ago. The restaurants were started fresh in Indonesia, with no operational origin in Japan. The group runs over 10 restaurants in Jakarta and Bali. It has 300 employees. Half of the employees are chefs. Two executives and 6 to 7 of the chefs are

Japanese. The rest are local people. Due to minimum wage laws, the labor cost has increased 45% this year. It is expected to increase 10% in the next year. Many staff get paid at the minimum wage. 50-60% of the customers are Indonesians, and the rest are Japanese. The restaurants' cuisine is genuine Japanese and is not highly adjusted to local tastes. Customers in Indonesia tend to think that Japanese food is clean and healthy.

The turnover of staff is high. Chefs may leave for other restaurants or start their own businesses. The way to protect the cuisine and the formulae of restaurants is to make key employees loyal and to prevent them from leaving. There are not many secrets to protect.

The restaurants use some Japanese ingredients imported from Japan and also some from Indonesia. In most cases, local vegetables can be used. In rare cases, Japanese vegetables have to be used in food preparation. Importing food from Japan is troublesome. Many Japanese food materials are made available on the market in Indonesia through Singapore. This allows avoidance of import taxes. Some supplies are genuine Japanese without Japanese packaging in order to avoid import taxes. Their prices are lower than supplies in original packaging. The restaurants use many suppliers. The quality of such food seems not to be a problem. The source of the materials seems not to be important to customers and the restaurants. The restaurants use whatever ingredients and materials make the final foods' tastes good. MSG is also used in the restaurants. Employees are asked to watch for the satisfaction of customers. When customers are not satisfied, the restaurants will change their food or give them more.

In addition to high import taxes on food seems, there are other barriers. The tax on imported alcohol is 300%. The restaurant's markup is 20%. However, a bottle of wine that costs US\$10 in Japan costs US\$80 in Indonesia. Indonesian Muslim customers drink alcohol but do not get drunk. The restaurants also serve pork, and Indonesian Muslim customers do not mind coming to the restaurants, although they do not order pork.

The group advertises in newspapers and online. The packages of Japanese food are usually much better than Korean food. The design of the setting of restaurants is very important. The group sometimes uses external designers to do the interior design. There are over 2,100 restaurants in Jakarta. 240 of them are Japanese. Japanese restaurants are owned by both Japanese and Indonesians. Korean restaurants in Indonesia are only owned by Koreans.

*A-1-5. National Board for Intellectual Property Rights in Jakarta*

A staff member told us that he has never seen fake Japanese food, even in the court concerning Japanese food. He has also provided us with his intellectual property rights book with regards to situations in Jakarta. We said to him that goods are shipped illegally from Singapore to Indonesia through Batam Island. He said that this island belongs to Indonesia and is approximately 20 kilometers away from Singapore. In fact, it takes only 30 minutes to ship goods from Singapore to Indonesia. Besides, he told us that the source of the fake Japanese food that we could find was located in Batam Island.

*A-1-6. Indonesian Food & Medicine Researcher in the Batam Region*

The staff explained that fresh food does not have to be registered at Batam. It will be directly sent to Jakarta, and the Ministry of Agriculture is responsible for inspection. The office's duty is to inspect only canned food products. These canned food products must be registered before they are shipped to Batam and delivered to other cities of Indonesia. Fruits and vegetables are imported from Japan and Singapore. Batam is a free trade zone, meaning that no tax payment is required. As a rule, 50 USD must be paid for each type of item to be imported every five years. In addition, approvals must be renewed at least 6 months before expiration. There are 16 categories of food products.

Staff added that illegal food products can be found in Batam. Once illegal products are confiscated, they are immediately burnt. The usual measures to handle illegal products involve first, giving traders a warning, but if traders do the same thing again, they will be prosecuted according to the law. To the

question of where fake products are from and which types of fake products are made, they told us that such products come from Singapore, Malaysia, Thailand, Taiwan, and China. They said that the majority of fake products they have spotted are from Taiwan. In 2008, a cosmetic product that claimed to be a Japanese product was found. However, the fake products imported from Taiwan are actually manufactured in China, and then shipped to Taiwan.

The officials added that most fake products are milk products. In fact, they inspect only the quality of the product. This office seems to serve like the FDA, which means that they monitor the quality of food. If they find that food products do not meet standards, they will not allow those food products to be sold in Indonesia. They said that they look at labels and the quality of products. Formalin has also been found in canned food products.

Regarding the question of whether they find any low quality Japanese food, they replied that no low quality Japanese food is found. We also raised the question of whether they have any chances to spot counterfeit products. They said that they have spotted counterfeit products in the form of drugs from China. To them, illegal food is defined as a product that is not registered. Singapore distributes the goods to sub-distributors, and they deliver the goods to their customers. The selling prices of products sold in Batam are 10 percent lower than in other parts of Indonesia. They inspect the distributors and manufacturers. Moreover, they are able to catch some illegal products. 45 employees in the office are not enough to control 2 million people.

#### *A-1-7. Logistics company in Batam*

We asked how smuggling occurs. Our source said that big players pay money to customs officers at Batam to evade taxes. To ship goods from Japan to Singapore, there is no tax payment. The way to evade a high tax payment is to create a fake invoice that falsifies the real quantity of goods. This allows them to pay less tax. Such practices have become normal for business. The more power a businessperson has, the easier he/she can avoid paying tax. The

following are the shared profits among related parties. 40 percent of legitimate tax goes to the country, 25 percent – 30 percent to customs officials, and the savings fall into the trader's hands.

In his company there are 7 workers. The interviewee mentioned that his company does not have any ships or vessels. His business is just making cargo arrangements. In fact, the company accepts shipping orders from customers, then finds transportation carriers to ship the goods for them. In other words, they outsource to the shipment and air delivery companies. Also, the company has to coordinate with other companies in Malaysia and Singapore. His service is like a door-to-door service. Smuggling in Batam is very easy, but in other Indonesian cities it is difficult. We asked which option traders prefer to use from his service. He said that the majority are smuggling goods. 80 percent are smuggling goods, while 20 percent choose official goods. This happens not only in Batam, but also in other cities of Indonesia.

Singapore seems to strictly inspect the goods but does not actually do so. They assist in smuggling products. The biggest market is in Batam, and the second is in Jakarta. If goods are directly sent to Jakarta, they must wait for a month. Then, they are moved to distributors. In contrast, if they are shipped to Batam, the goods are released faster. It takes only a day.

We asked why Batam has become an industrial zone. The interviewee said that there is a local need. That is why the assembled goods are imported by cities of Indonesia. Most companies in Batam are from foreign countries. They are Singaporean-Chinese companies. Moreover, Japanese restaurants provide a demand for illegal import of Japanese ingredients. The police know about the smuggling activity but do nothing. This is due to the fact that the customs officials give some money to them.



## **A-2. VIETNAM**

### *A-2-1. Japanese MSG maker in Ho Chi Minh*

There are several competitors in the MSG market. They are producers in Vietnam, Taiwan, and South Korea whose prices are 10% less than that of this company. The company's share in the marketplace is about 50%. 95% of consumers' complaints are about whether the product they bought is fake or not. It is difficult for consumers to distinguish fake from authentic products. The staff of this company watch the market every day. From the appearance of MSG in the package, they can easily realize fake products.

Authorities enforce against fake branded MSG if a company pushes them to do so, under cooperation. Police organize teams of 15 to 20 policemen to observe a factory and enforce in the marketplace. The company supports them through giving foods during investigating and watching retailers. For investigation and to obtain permission to attach a team to a factory, it takes about 2 months. Some Japanese companies complain to the police that there are many counterfeits in the marketplace. But the police do not address the complaints because they need support and there is no money to enforce against counterfeiting. Regarding foods and medicines, authorities prosecute infringers when there is risk to consumers. As to other fake products, like copies of CDs, authorities only assess fines against them.

A factory producing fake MSG is very small. Most use a house, and the machinery to produce MSG is cheap and simple. That is, the business is easy to start. The selling price of fake MSG is the same as that of real MSG. Thus, sales can bring about a big profit. The company's MSG buyers are almost all consumers. Restaurants do not mind the quality of MSG, and they use cheap substitutes and also want cheap seasonings to cook with. Different from housewives, they do not mind brand names. Hence, the share of the company's branded MSG at restaurants may be small.

The counterfeits of MSG products have reached the professional level. Their packing is printed with modern equipment made in China, which makes

the scale of these counterfeits larger and larger. There should be preventative measures from all level of authorities. The investment in human resources and facilities to stop fakes should receive more attention to in order to show the authorities' concern over the business environment in Vietnam. Additionally, state officials should learn about copyright issues to be able to be aware of the importance and strictness of law in protecting enterprises and community interests

Although no cases in which counterfeits of the company's products have caused harmful effects to consumers' health have been detected so far, such an event could result in serious consequences in the long run if the matter is not under tight control. To maximize profit, it is very likely that counterfeiters will add unsafe substances into their products. The company has been collaborating with a number of authorities to hold periodic seminars and exhibitions to help consumers distinguish genuine products from fakes.

#### *A-2-2. Office of Market Management and Regulation of Lang Son Province*

The office has 122 employees, including 90 directly regulating markets in 11 districts of the province. It is in charge of regulating the markets, imports, and exports throughout the province. More food is imported than exported. The office is under-staffed and under-funded. The staff also needs more training to recognize counterfeits. Sometimes, companies come to the office to train officers to recognize counterfeits. The goods investigated include not only those sold in Lang Son but also those distributed from Lang Son to other parts of the country. The office places priority on medicine and food. For other products, the office mainly investigates if a problem is reported or requested by a company.

There are three offices of three different governmental organizations involved in inspecting products at border gates. Products are inspected by security machine. The customs office takes samples of foods passing through the gates. When a problem is reported or investigation requested, the office

investigates to get the evidence, and then contacts the suppliers or distributors. If the amount involved in a violation is over about US\$1500 to US\$2500, the case will be referred to police. The food in question can be sent to a lab for testing. The office has not found fake food products made in Vietnam, but has found fakes from China. For example, Chinese apples, cantaloupes, and oranges were camouflaged as imported from the U.S. There are also counterfeited Vietnamese soy sauce (nhat pham tien), candy, and Korean tea.

Smuggling can happen along borders with no gates. The volume in such individual cases can be low. However, the volume can add up if there is a lot of such small smuggling. The future plans of the office include setting up a website to publish information about suppliers, sellers, and products to help buyers to recognize original and legitimate products, assess quality, etc.

*A-2-3. Store owner at Dong Dang in Lang Son Province: No.1*

She and her husband own a store selling fruits, porcelain, and sculpture-type art works. 30% of the fruits are from China and 70% from Vietnam. The fruits ordered directly from China are paid for with Chinese currency, and go through customs. She also orders U.S. apples from Hanoi. She knows that China also buys U.S. apples in Hanoi. 30% of her sales are made by selling to China, and 70% by selling to local residents and customers in other parts of the country. 30% of her supplies from China go through official customs, and 70% are transported by road over the mountains without paying taxes.

Porcelain imported from China does not go through customs but is smuggled in. The smuggling process is as follows. She orders products from a supplier in China. A person specializing in cross-border transportation goes to China, pays the supplier's price, picks up the goods, transports the good through roads over the mountains in the evening, and delivers the goods to her. She pays the transporter a markup over the supplier's price.

According to our guide, 90% of the goods sold on the market in this town are smuggled using small roads over the mountains. 20% of the smuggled

goods are sold in the local markets, and the rest are distributed to other parts of the country. A few years ago, over one hundred people were caught by the government smuggling from China, but the smuggling continues. The basic reason is that local people and leaders have a common interest in the process. If higher government officers were to come, local leaders would inform the people who smuggle goods. Smugglers would disappear for a short time.

*A-2-4. Store owner at Dong Dang in Lang Son Province: No.2*

The store is run by a lady, her husband, two daughters, and a grandson, opening between 7a.m. and 6 p.m. Its sales are 70% from Vietnamese foods and 30% from foreign foods. She imports more from China than she sells to China. Her orders come from Hanoi, and 70% of her sales are made to local people. She has just a few suppliers in China. Selling Chinese food is more profitable because Vietnamese customers generally think that foreign goods are better. The store uses the same markup for sales to Chinese customers, local customers, and customers in other parts of Vietnam.

The most interesting information from this interview may be that about how supplies from China and sales to China are made and fulfilled. The process of ordering supplies from China is as follows: The store makes an order to a supplier in China, either by phone or paper, through a transporter; the supplier gives the goods to the transporter; the transporter moves the goods across the border through roads in the mountains and delivers the goods to the store; the transporter gets a receipt of goods from the store, gives the receipt to the supplier, and gets the transportation fee from the supplier; the supplier gets the receipt of goods and uses it to collect payment from the store. Selling to China would be the reverse of this process. The store really does care about how the goods are moved across the border and also about the price and quality of the goods; for the suppliers in China, moving the goods through roads in the mountains to avoid taxes reduces costs, therefore enabling them to sell at lower prices.

The transportation cost, for example, for a box of umbrellas would include 10,000 Vietnamese Dong (VND) from the supplier to the border on the Chinese

side, another 10,000 VND to move it across the border through mountain roads, and a further 10,000 VND from the border on the Vietnamese side to the store.

*A-2-5. Store owner at Dong Dang in Lang Son Province: No.3*

The store is run by a lady and her granddaughter. It has been in business since 1993. 30-40% of their sales are made to customers from outside of Lang Son, most within a 200 km distance. Customers from outside the city buy more per transaction.

Most of her goods are imported from China. The store orders goods almost every day from suppliers in the Tan Thanh Border gate area. Its daily supplies are about 15,000,000 VND or US\$750. The costs of getting supplies directly from China or from the suppliers in Tan Thanh are almost the same. Sometime goods are not available when government intensifies its enforcement against smuggling. The store's rent is 2,000,000 VND /month, tax 500,000 VND per month, and utilities cost 200,000 VND per month.

*A-2-6. Food trader in Lang Son*

The company has 10 trucks and sometimes needs to rent up to 70 to carry fruits from Thailand to China. The typical volume is 15-30 containers a day. Trucks pick up the fruits on a bridge in the Mekong River between Thailand and Laos. It takes two days to deliver the fruits to the border between Vietnam and China. The roads in Laos and some parts of Vietnam are not good. There are about two truck accidents on the road per year.

There are quality problems with Chinese fruits because of use of fertilizers and pesticides, and also processing of the fruit for storage. Some fruits from China can be stored for three months. The trader does not know the reason for such a long storage time. His friend in China once told him not to eat the fruit he sells to him. If he wants to eat some, the friend would send something different.

Inspection at the border is mainly to look at documents and sometimes to take samples. At the Thailand border, machines detect leaves which may come

with oranges from China. The Thai regulation does not allow leaves with fruits due to concerns about insects with the leaves, even though customers prefer to buy oranges with leaves for freshness. Therefore, now exports of oranges from China to Thailand are few.

There are no taxes for fruit traded across the border between Vietnam and China. China's inspection of goods entering China is stricter than of those going out. Sometimes there are 2,000 trucks waiting at the border gate to get into China. The trader also provides a service to get import/export permits and border-crossing documents. In terms of importing Japanese foods into Vietnam, he thinks it is still too early, due to the high prices of Japanese food.

#### *A-2-7. Japanese food supplier in Hanoi*

This supplier imports food directly from a major Japanese dealer. Some companies are importing ingredients from China at cheap prices. For example, a Vietnamese company has been selling about 50% ingredients imported from Japan and 50% from China.

As to octopus, there is a counterfeit imported from China. It looks colorful, and is nice-looking, but the quality is bad. The original just has ice on the surface, but the counterfeit has about 300-400 grams of ice inside, and the taste is not good. Therefore, Vietnamese consumers are losing their trust in Japanese food. As for salmon roe (Ikura), the counterfeit sparkles and also has elasticity. It bounces when thrown on the floor. The taste is different, and it does not melt when eating. The original melts in your mouth. The counterfeit may be produced using plastic. The price of the counterfeit is 50% cheaper than the original. Many restaurants (excepting high-class restaurants and hotels) use this counterfeit. As for saké, there are no fakes. About 50~60% of Japanese restaurants are using cheap ingredients from China: seaweed, soy sauce, etc. It is not clear whether they are counterfeit or not, but they are very cheap.

Counterfeits produce bad effects on competition. For example, a product which had been sold at the price of 850,000 VND came down to 750,000 VND when the counterfeit from China was sold by 650,000 VND. The number of

customers and market share of this supplier went down. It is difficult to do business in Vietnam since most owners of Japanese restaurants also want to use counterfeits when they run a small business.

Counterfeits have the same packages as originals, but the content is different and only Japanese people can realize the difference. Soy sauce is often faked and sold in the markets. The color of the package could change from red to brown, but this is only realized after use. Fake seaweed fades when immersed in water. Japanese restaurants in Vietnam have made the price go down. Therefore, the profit is not high. Counterfeits come not only from China, but also from Taiwan, but Vietnamese people do not pay too much attention to that.

#### *A-2-8. Japanese Yakiniku restaurant*

When the restaurant had just been opened, many Vietnamese solicitors came to sell products such as seaweed, wasabi, soy sauce, etc. The price was cheap. However, these products did not have clear places of the origin. After complaints by Japanese customers, the restaurant has only purchased good products from major suppliers.

Soy sauce is the ingredient that is faked the most. Vietnamese (including the staff here) could not realize the difference between a soy sauce for yakiniku and one for sushi. Unless Japanese customers complain about the quality, the staff cannot avoid the counterfeits. After importing saké from Japan, the wholesaler opens and takes out half of the amount, placing it into another bottle. Next, the counterfeit, which could be from China or Vietnam, is put into the bottle and mixed. Then, the bottle is closed tightly again. As the staff in the restaurant could not open every bottle to check, only Japanese customers could recognize the difference.

#### *A-2-9. Japanese food restaurant in Hanoi: No.1*

The owner had worked a part-time job in a Japanese restaurant for 4 years when studying in the UK. He started learning about Japanese food and has been cooking since then. 70% of the customers are Vietnamese; the rest are Japanese and tourists. Some of the food's flavor is adjusted to match Vietnamese tastes.

He has never seen counterfeiting of seasonings or saké. When the restaurant had just been opened, many Vietnamese solicitors came to sell their products, but, worrying about the quality, he refused.

*A-2-10. Japanese food restaurant in Hanoi: No.2*

The owner and the chef are Japanese. 80% of the customers there are Japanese; 15% are Vietnamese, and 5% are tourists from Southeast Asia.

Sometimes saké is mixed with water. After opening the cap on the bottle of saké, counterfeiters take out some of the contents and put some water into the bottle. Then they turn it over, and the customers serve themselves. Nobody knows if that saké is the real thing or the counterfeit after it has been opened.

The saké is imported directly from China. The owner does not make sure whether it is counterfeit or not, as long as the label is stuck on properly. However, the taste is totally different from the taste of originals sold in Japan. Japanese could not drink it.

*A-2-11. Japanese food restaurant in Ho Chi Minh City: No. 1*

The chef here has 15 years of experience in Japan before coming to Vietnam. 90% of the customers are Japanese because the restaurant offers high quality food with the real Japanese taste.

There was one case of soy sauce with a completely different taste than the original. The imitations may come from China. Many places sell fake MSG seasonings. The real product has higher prices and is 5 times sweeter than fakes.

*A-2-12. Japanese food restaurant in Ho Chi Minh City: No. 2*

Because the business is of small scale, it would be too expensive to get ingredients from the import companies. Since acquaintances help them bring back ingredients, the owner can find good ingredients with good price.

As to counterfeits, a supplier convinced the owner that he was supplying real Japanese eel with a package showing the Shizuoka origin. At first look, the



size of the eels was small and the price was expensive, 140,000 VND for 1/3 of the eel, so they believed the supplier. However, after being cooked, the eel had a tough texture and unusual flavor. There are different types of eel in Vietnam coming from Taiwan, Korea, and China. Taiwanese eels are expensive, whereas Korean and Chinese eel have reasonable prices and are similar in taste to Japanese eel.

The owner bought Shochu bottles from smugglers in Cambodia, but the wine inside was fake. He has to check the custom stamps on the caps to avoid fakes. Many bars and restaurants on Ngo Van Nam streets use fake alcohol.

All of the seasonings the restaurant uses are Japanese ones hand carried to Vietnam. Soy sauce made from soy beans in Vietnam does not have the same taste as that made from beans from Japan. Water and ingredients would affect the quality. As a result, even if the recipe is the same, soy sauce made from Vietnamese ingredients can't have the same taste. As for Shochu, for examples, there are 2 Japanese companies trying to re-create the taste with different methods, but they have not been successful.

### ***A-3. Thailand***

#### *A-3-1. Japanese snack food company in Bangkok: No. 1*

There is a factory in Thailand and now one in Indonesia under construction. The products manufactured in Thailand are also exported to other countries, except China. This is because the country has already established factories in China. The head office in Japan manages IPRs and overseas royalties go to Japan.

The best-selling snack food in this company, a shrimp-flavored snack, is imitated in other Asian countries, since the companies who produce machines to make the snack offer the machine to all buyers. This situation has happened in other snack businesses as well. In the past, the company did not have a section controlling IP rights, and so the technology the company invented was easily copied. The trademark of the snack food was registered 20 years ago, but imitation was easy by using the same machine.

It is not easy for counterfeits to survive in the marketplace, not only because people want to buy the originals, but also because the profit per sale is very small, and there is no incentive to produce such counterfeits. Generally speaking, Thai people misunderstand that “HANABI” is a product of Japanese company.

#### *A-3-2. Japanese snack food company in Bangkok: No. 2*

There are factories in Thailand, Indonesia, and Vietnam, and distribution centers in the Philippines, Malaysia, and Singapore, and also offices in Myanmar, Cambodia, and Laos.

The company uses a special machine to produce a popular snack food, and that machine was invented by a processing machine company. As a result, there are other players capable of producing similar snack foods, since the same model of machine is available to other snack companies. However, imitation of snacks does not affect the business due to the taste, which cannot be copied.

Companies offering imitations of Japanese snacks in southeast Asia share similarities in the way they do business, as Japanese companies imitated Western snack foods in the past. Thai companies who imitate Japanese snacks do not offer similar tastes to those of snacks manufactured in Japan. They make some changes in taste in response to local preferences. There are many Japanese-imitated snacks available in Myanmar markets, produced by Chinese companies. Korean companies can produce similar snacks to those of Japanese companies due to the fact that they can buy the machine used for snack production in Japan.

#### *A-3-3. Customs office in Mae Sai*

The port is busy. Products are inspected by X-ray machines as in airports. They are randomly checked at a 20% rate. Smuggling has decreased from 5 years ago. One reason is the free trade agreement signed with China about 5 years ago. The second reason is that counterfeited products are of low quality, thereby resulting in decreased demand. A third reason is that policy is enforced more

effectively. Myanmar is adopting a similar policy. Therefore, it is predicted that smuggling in Myanmar is likely to drop further.

Food is inspected by the Thai FDA at customs to determine whether it meets the required standards before entering Thailand. There are few fake products. There was fake Japanese snack food made in China 4-5 years ago but no more now. There are black markets in Hong Kong and Singapore. The main target of counterfeiting has switched from Japanese food to Thai food because people prefer Thai food to food made in China. For Thai people, Thai food is of a suitable quality and at an affordable price.

#### *A-3-4. Japanese food restaurant in Bangkok*

The manager is Thai, and the owner is Japanese. They run two different Japanese restaurants. The first one is for general Japanese food while the other is an izakaya, a Japanese bar. The chef used to work in Japan and came back to Thailand in 2002.

Liquor is a problem. He bought a bottle of whisky at half-price. On the following morning, he got a headache. There are many fake liquor beverages in Bangkok, including Japanese saké. His restaurant is using cooking saké, mirin, produced in Vietnam. Its quality is acceptable. The producer is Thai, and the factory is in Vietnam.

#### *A-3-5. Japanese food supplier in Bangkok*

The owner imports many kinds of products from Japan. She has two businesses, importer and restaurant owner, and has been in the import business for 30 years.

Four or five years ago, there was an importer in Bangkok who offered her toro (fatty tuna) at a low price. When she tasted it, she felt uncomfortable and wanted to vomit. Finally, she decided not to buy toro from the importer.

**Acknowledgments:** This article was financially supported by a Waseda University Grant for Special Research Projects (Project number: 2021C-601), and JSPS KAKENHI (Grant Number 20K01716).

## REFERENCES

- Anania, G. and Nisticò, R., 2004, “Public Regulation as a Substitute for Trust in Quality Food Markets: What If the Trust Substitute Cannot Be Fully Trusted?,” *Journal of Institutional and Theoretical Economics*, 160 (4), 681-701.
- Bonroy, O. and Constantatos, C., 2008, “On the Use of Labels in Credence Goods Markets,” *Journal of Regulatory Economics*, 33 (3), 237-252.
- Darby, R. M. and Karni, E., 1973, “Free Competition and the Optimal Amount of Fraud,” *Journal of Law and Economics*, 16 (1), 67-88.
- Domon, K., 2018, *An Economic Analysis of Intellectual Property Right Infringements - Field Studies in Developing Countries*, Palgrave Studies in Institutions, Economics and Law, Palgrave Macmillan.
- Fulton, M., and Giannakas, K., 2004, “Inserting GM Products into the Food Chain: The Market and Welfare Effects of Different Labeling and Regulatory Regimes,” *American Journal of Agricultural Economics*, 86 (1), 42–60.
- Higgins, S. R. and Rubin, P. H., 1986, “Counterfeit Goods,” *Journal of Law and Economics*, 29 (2), 211-230.
- Ohkuma, Y., 2013, “Some IP Issues in ASEAN,” Domon, K., Lam, T., and Kaur, S. ed., *Intellectual Property Rights in Developing Countries: Conference Proceedings, Vietnam 2012*, VNU-HCM Publishing House.
- Suzuki, T., 2014, “Shokuhin ni Kansuru Chitekizaisan ni tsuite,” *Patento*, 67 (8), 41-47.
- Vetter, H. and Karantininis, K., 2002, “Moral Hazard, Vertical Integration, and Public Monitoring in Credence Goods,” *European Review of Agricultural Economics*, 29 (2), 271-279.
- Xiu, C. and Klein, K. K., 2010, “Melamine in Milk Products in China: Examining the Factors that Led to Deliberate Use of the Contaminant,” *Food Policy*, 35 (5), 463–470.

## Chapter 2

# Frequency-Dependent Selections and Design Right

*Koji Domon, Giovanni Battista Ramello, and Alessandro Melcarne*

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### 1. INTRODUCTION

Theories of biological evolution were triggered by mimicry of butterflies, which was detected in the 19<sup>th</sup> century. Since then we have found plenty of mimicry in the field where, to avoid attacks from predators, a potential prey species imitates an unpalatable one, cheating a predator. There are two kinds of well-known mimicry in biology<sup>1</sup>.

In Batesian mimicry, mimics with a taste favored by a predator imitate a model carrying an unpalatable taste or a toxic substance, cheating the predator. In this case only mimics have benefits from imitation, resulting in an increase in the rate of models attacked by predators. The phenomenon that the attack rate of models increases along with the number of mimics, decreasing the ratio of models in populations of models and mimics, is called *negative frequency-dependent selection*.

In Müllerian mimicry, the shape and color of an unpalatable model are imitated by other insects, and the group of insects effectively escapes attacks by predators. Since predators learn of a bad taste after eating some insects, the probability within the group of being eaten is reduced. The group utilizes a positive mutual externality, increasing the ratio of imitated prey in the population, i. e., *positive frequency-dependent selection*.

In industries and marketplaces, we can also observe mimicry regarding human behaviors<sup>2</sup>, industrial products, and technologies, which is often

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<sup>1</sup> Regarding the survey of mimicry, see Chapters 10 and 11 of Ruxton et al. (2004) and Ohzaki (2009).

<sup>2</sup> In a broad sense, consumers often mimic purchasing behaviors of others, creating a bandwagon effect on consumption. Regarding such mimicry in sales, see Herrmann et al. (2011). As we examine designs or visual appearances using considerations of biological mimicry, this is a somewhat different discussion.

prohibited by intellectual property laws. Unlike the biological world, human society has artificially managed and prohibited mimicry or imitation in order for creators to be compensated their efforts. The phenomenon that biological mimics of a prey species, like a butterfly, visually deceive predators is interpreted in a market as infringement of a design right (or patent) by a copycat. However, while Batesian mimicry damages models or originals, Müllerian mimicry benefits all prey species.

Judgment of infringement is often controversial and disputed in the court, since criteria for imitation regarding lookalike products is ambiguous<sup>3</sup>. In addition, there are many lookalikes that are not prosecuted, are neglected by original producers, and are sold in markets. This suggests that whether a suit is pursued apparently depends upon assessment of costs and benefits by plaintiffs. Using an analogy of biological mimicry, we can in part explain such neglect as Müllerian mimicry causing positive externalities, with the possibility that original producers benefit from lookalikes. Pursuing this analogy, this article reconsiders meanings of design rights and regulations from the perspective of biological evolution.

Our discussion proceeds as follows. Section 2 addresses related discussions. Section 3 considers imitation with a negative frequency-dependent selection and its market equilibrium, and proves the necessity of enforcing against imitation. Section 4 considers a lookalike product with a positive frequency-dependent selection, which can increase social welfare and producers' profits, and proves a socially excessive (insufficient) entry under a relatively high (low) fixed cost when producers maximize profits. Section 5 presents actual phenomena in a marketplace concerning design rights and litigation. Finally, Section 6 concludes the discussion.

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<sup>3</sup> For example, regarding trademark infringement as closely related to design right, Beebe (2006) considered many cases in US courts and showed empirically that multiple factors causing consumer confusion influenced judgements. Rafiq and Collins (2006) considered consumer confusion between lookalike own-label and well-known original label products. They showed that established original brands lost market share and a certain percentage of consumers were confused by legal but similar packaging and designs at major grocery stores in the UK.

## 2. RELATED LITERATURE AND DISCUSSIONS

Focusing on the literature of intellectual property rights (IPRs) in economics, including law and economics, we can find few papers regarding design right, though there are a plenitude of papers regarding patent and copyright. A seminal book about the economics of IPRs, Landes and Posner (2003), mentions design right (design patent in the US) only in a short note. They argue that design right could be protected by copyright and is similar to trademark in terms of being an identifier of a product<sup>4</sup>.

Discussions in this paper are also related to other fields; biology, game theory, and industrial organization. A model of biological evolution sets up a dynamics of population. Vázquez and Watt (2011) used a Lotka-Volterra model to analyze the dynamics of original and counterfeit producers' populations or frequencies. Their model considered populations of all originals and counterfeiters in an industry in order to use a biological prey-predator model and showed the possibility that counterfeits (predators) increase with originals (prey), under strict enforcement, resulting in a growth of prey. However, their discussions did not explicitly consider either a process of market competition, due to the assumption of exogenous prices, or incentives of original and fake producers. These factors are essential in order to consider legal aspects and competitive effects on market performance. An analogy of biological evolution to piracy by a prey-predator model requires an endogenous population or a number of original producers. As Nowak (2006) summarized, replicator dynamics, which is equivalent to Lotka-Volterra's model in a linear model and uses evolutionary stable strategies<sup>5</sup> to define equilibrium stability, also requires

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<sup>4</sup> In Japan, the shape of a well-known motorbike, Honda Super-Cub, was registered not with a design right but with a three-dimensional trademark in 2014. Before Honda's registration, the Coca Cola bottle was also registered in 2009. Both could have been registered with design rights, but the trademark was preferable since it can be updated every 10 years. The duration of a design right is 20 years with no update.

<sup>5</sup> An analysis by evolutionary stable strategies treats each player (species) whose ratio (mixed strategy) determines the equilibrium, who have no choice to select behaviors as passed genes do. The analysis is persuasive in social sciences when we consider morals, traditions, and customs that are passed over generations. See Smith (1982).

endogenous populations since biological evolution focuses on a change or a balance of species' populations.

Before Lotka-Volterra's model, Müller (1879) had first presented a simple mathematical explanation for the mutual benefits of Müllerian mimicry. In a context of economics, the explanation describes mutual positive externalities on the demand side. In biology the externalities take place when the visual appearance of unpalatable prey is similar in a group and can be an alert to predators. Sherratt (2008) surveyed recent discussions about Müllerian mimicry in biology and mentioned similar discussions in marketing. In economics the mimicry can be considered an appropriate model when tasty food or high quality products effectively signal consumers with a similar package design, creating a positive mutual externality and deriving a higher demand from consumers. Unlike Batesian mimics, the mimics or producers do not cheat consumers.

There are many kinds of externalities affecting consumers, such as bandwagon, snob, herding, and network effects. Externalities in Müllerian mimicry decrease search cost for predators or consumers in selecting prey or goods. This is like an advertisement effect created by forming a group. Along with the number of producers supplying differentiated goods, consumers' demand increases through a search cost reduction. A key factor is that the advertisement effect makes a group or a variety of products stand out in the marketplace. In general, advertisements, when consumers' externalities exist, cause a game-theoretical phenomenon (Pastine and Pastine, 2002) and producers determine the number of advertisements, taking into account those of others. However, such an analysis assumes a fixed number of producers and does not consider the advertisement effect of a variety of products, which relates to the necessity of a design right. Since the number of products cannot be a strategy of individual producers, the advertisement effect by a variety is exogenous for producers. In an oligopoly model of differentiated goods, Stivers and Tremblay (2005) considered interaction given the number of producers and the costs of searching, and showing a resultant effect of advertising cost on



market equilibrium. But their discussion did not argue the relationship between the number of producers and search costs<sup>6</sup>.

Stigler's search theory (1961) has led to discussions associated with differentiated goods. Anderson and Renault (1999) and their extensions, such as Kuksov (2004), use a matching probability with favorite goods, differing from the spatial models of Hotelling (1929) and Salop (1979). Our analysis uses a more general product differentiation model (Dixit and Stiglitz, 1977) with a CES utility function and focuses on the effect of a new entry. In the model, along with the number of producers, consumers' search costs decrease through effects of unintentional advertisement or positive externalities among producers, seen as Müllerian mimicry.

The basic analogy underlying this article comes from biological mimicry, but the analysis has important implications for including a design right in intellectual property rights. The above related discussions have not addressed this right, only focusing upon market performance from a perspective of industrial economics, such as socially excessive variety, effects of search cost and product diversity on a market price, so on. Controversial infringements of design rights frequently take place in the real marketplace and the court. We extend a theoretical analysis of Domon (2018) concerning this problem by using a similar model.

### **3. A DIFFERENCE BETWEEN IMITATIONS AND LOOK-ALIKES**

The main difference between Batesian and Müllerian mimicry is whether mimics cooperate with their model or not. In the former case, mimics have an opposite property (palatable) to that of the model (unpalatable), and the ratio of attacks to mimics by a predator decreases while that to the model increases. On

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<sup>6</sup> In an empirical analysis on supermarket retailing, Richards et al. (2017) considered effects within and among stores of product variety on search costs. They showed that, along with product variety, search costs over brands within stores increased and those among stores decreased. These outcomes resulted from an actual situation in which stores strategically and competitively arrange and promote product variety while consumers search for their favorite brands. In reality both retailers' advertisement or promotion and consumers' searching interact with each other in the marketplace.

the other hand, in the latter case mimics have the same property (unpalatable) as the model, and both can decrease the attack rate of a predator.

When we consider a design right for products, the above difference has significant meanings for lawmaking. Imitated products that consumers find almost visually indistinguishable from originals, yet whose quality is apparently lower than that of originals—i. e., a type of Batesian mimicry—damage both the original producer and consumers, bringing about a disincentive to improve quality. In this case, lawmakers should prohibit imitations for a certain duration to create an incentive for the improvement of product quality.

Look-alike products that most consumers can visually distinguish from originals and whose quality are similar to that of originals—i. e., a type of Müllerian mimicry—are controversial in terms of regulations by which a court judges infringement. Cases about design right infringement in court are associated with the similarity confusing consumers (Beebe, 2006). Behind these claims, however, we see many look-alike products that coexist and are not prosecuted by the original producer. Possible factors causing such coexistence are, for example, judicial cost and a low possibility for gain from a case. Considering the definition of Müllerian mimicry, we can add another factor creating mutual merits for all producers, so-called mutual positive externalities.

Following Müller's argument, look-alike products as a whole attract consumers due to visual appearance. This can be explained by a consumer's purchasing behavior in a retail market. When look-alike goods make a category expressed by the shape and color of a package, such as seen in potato chips and chocolates, consumers imagine the taste from the appearance and easily find goods. If an original were not differentiated enough to compete with competitors, the producer would benefit by joining the competitor's category with look-alike goods; at the same time, this expansion of the category created by the original producer would draw more consumers to the category. This situation corresponds to a mutual positive externality of Müllerian mimicry.

Before proceeding to an analysis of mutual positive externality in look-alike product markets, we will briefly consider a market of perfect imitations or fake

products, comparing them with biological mimics. Evolutionary biology usually explains the dynamics of living creatures' populations by a logistic or Lotka-Volterra model (Nowak, 2006). Mimicry is a phenomenon in a type of predator – prey relationships that can be analyzed by a Lotka-Volterra model. However, this model is inapplicable to markets of imitated products, since the number of an original producer or a rights holder is fixed at one in considering a specific product's market and consequent policymaking about intellectual property rights. In a competition with fake producers, the frequency of an original producer among all producers always decreases, while that of fake producers increases until a new fake producer does not make a profit. This situation expresses a negative frequency-dependent selection in which the value of fake production declines with frequency. In nature, the constraint is natural environment or ecology, but in a marketplace, it is market demand. Sticking to the dynamics of the number or frequency of fake producers, we can use a logistic model, neglecting interactions among producers in a market competition (Vázquez and Watt, 2011). However, such a model is too general to analyze the effects of new entry of fake producers on consumer's welfare and producers' profits.

In order to analyze a negative frequency-dependent selection explicitly by an oligopoly model, we use the following simple model, which modifies a model in Domon (2018). An inverse demand function is,

$$(1) \quad p = \frac{a}{n} - \frac{b}{n^2} \sum_{i=1}^n q_i,$$

which is derived from the following quasi-linear utility function,

$$(2) \quad U = v(Q; n) + m \text{ s.t. } I = pQ + m \quad \left( Q = \sum_{i=1}^n q_i \right), \text{ and}$$

$$(3) \quad v(Q; n) = a \cdot \frac{Q}{n} - \frac{b}{2} \cdot \left( \frac{Q}{n} \right)^2,$$

where  $p$  is a market price<sup>7</sup>,  $q_i (i=1,2,...,n)$  the amount of firm  $i$ 's products,  $v$  a benefit function with  $v' > 0$  and  $v'' < 0$ ,  $I$  income, and  $m$  residual income. Here, there are an original producer and  $(n-1)$  fake producers.  $a$  and  $b$  are strictly positive parameters. The right hand side of (1) expresses expected marginal utility if the value of a fake is zero. In a symmetric situation, the market share of original products and the probability of buying original products is  $1/n$ .

An original producer's profit is

$$(4) \quad \pi_1 = pq_1 - f - cq_1$$

An original producer is indexed as Firm 1, and others as Firms 2, ...,  $n$ .  $f$  and  $c$  are, respectively, fixed cost and marginal cost. Only an original producer has the fixed cost of producing a high-quality product. A fake producer's profit is

$$(5) \quad \pi_i = pq_i - cq_i, \text{ for } i = 2, 3, \dots, n.$$

Except for fixed costs, an original and a fake producer face the same situation. In order to solve this game concretely, symmetry is necessary.

A Nash equilibrium is obtained as follows,

$$(6) \quad q^N = \frac{(a-cn)n}{b(n+1)}, \quad Q^N = \frac{(a-cn)n^2}{b(n+1)}, \quad p^N = \frac{a+cn^2}{n(n+1)}$$

where  $q^N = q_i^N (i=1,2,...,n)$ . Denoting market supply and price as, respectively,

$Q^N$  and  $p^N$  at this equilibrium, we obtain that both an original and a fake producer's profit, as well as consumers' and producers' surpluses,

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<sup>7</sup> In a signaling game where a price is a strategy, the same price of an original and fake means a pooling equilibrium, and a consumer cannot distinguish an original from a fake. Deceptive counterfeits or Batesian mimicry belong to this type. An incomplete information game with such signaling is intractable to analyze frequency of counterfeiters and free entry.

$$(7) \quad CS^N = \int_0^{Q^N} p dQ - p^N Q^N, \quad PS^N = \sum_{i=1}^n \pi_i^N.$$

**Proposition 1:**  $\pi_i^N (i=1,2,...,n)$  and  $SW^N (= CS^N + PS^N)$  are strictly decreasing with  $n \geq 1$ .

**Proof.**

$$\pi_1^N = \frac{A}{b} - f, \quad \pi_i^N = \frac{A}{b}, \quad (i=2,3,...,n), \quad CS^N = \frac{An^2}{2b}, \quad \text{and} \quad PS^N = \frac{An}{b} - f,$$

where  $A = \left( \frac{a-cn}{n+1} \right)^2$ . Since  $dA/dn < 0$ ,  $d\pi_i^N/dn < 0$  ( $i=1,2,...,n$ ).

$$\frac{dSW^N(n)}{dn} = \underbrace{\frac{a-cn}{b(n+1)^3}}_{+} \underbrace{\left\{ -(a+c)n^2 - (2a+3c)n + a \right\}}_{Z(n)},$$

and  $Z(1) = -2a - 4c < 0$ ,  $dZ(n)/dn < 0$ . Therefore,  $SW^N(n)/dn < 0$  for  $n \geq 1$ .  $\square$

In a usual oligopoly without a fake product, entry of newcomers into a market increases social welfare by a certain level. However, in this model, demand shrinkage resulting from a fake product causes a decrease of  $SW$ . The competitive effect caused by a new entry cannot compensate for the shrink in demand. It is easy to ascertain that this result is valid if a fake product has less value than an original one. This explains the necessary illegality of imitation products.

Under no law enforcement, fake producers enter the market as long as they can make positive profits. However, without an original producer, consumers do not buy any products, and the market disappears. A threshold for an original's zero profit,  $n^*$ , is obtained as follows,

**Proposition 2 (Threshold of Market Existence).**

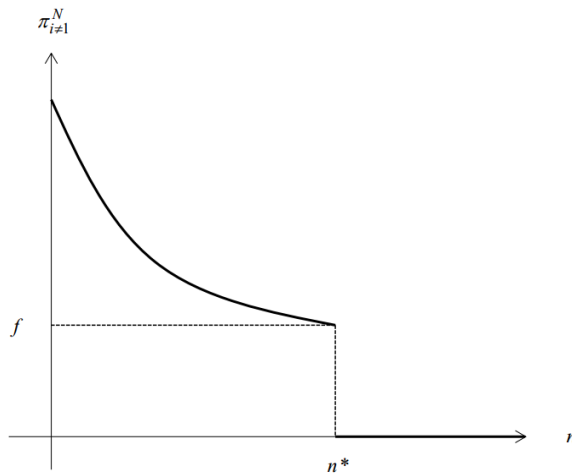
$$n \begin{pmatrix} > \\ = \\ < \end{pmatrix} \frac{a - \sqrt{bf}}{c + \sqrt{bf}} (\equiv n^*) \Leftrightarrow \pi_1^N \begin{pmatrix} < \\ = \\ > \end{pmatrix} 0 \text{ and } \pi_{i \neq 1}^N \Big|_{n=n^*} = f.$$

Proof.  $d\pi_1^N/dn < 0$  and we obtain  $n^*$  from

$$\pi_1^N = \frac{A}{b} - f = \frac{1}{b} \left( \frac{a - cn}{n+1} \right)^2 - f = 0.$$

Inserting  $n^*$  into  $\pi_{i \neq 1}^N$ , we easily obtain  $\pi_{i \neq 1}^N \Big|_{n=n^*} = f$ .  $\square$

This proposition indicates that, under free entry and no enforcement, fake producers make strictly positive profits that are equal to fixed costs of an original producer while an original producer's profit is zero at equilibrium. This result is different from a usual oligopoly under free entry where all symmetric producers' profits are zero. The market share of an original product goes down from 1 to  $1/n^*$  in the long run. The higher the fixed costs, the more profits of fake producers increase in the long run. Since the cost is invested in the R&D for an original, fake producers benefit from higher R&D by an original producer.



**Figure 2.1. An equilibrium in a negative frequency-dependent selection**

#### 4. A POSITIVE FREQUENCY-DEPENDENT SELECTION IN SIMILAR PRODUCTS

In Müllerian mimicry, the shape and color of an unpalatable model are imitated by other insects, and the group of insects effectively escapes attack by predators. Since predators learn of a bad taste after eating some insects, the probability within the group of being eaten is reduced. Group members utilize a positive mutual externality. A similar positive externality is also created in markets. The probability of consumption may increase when consumers have more chances to see a similar kind of products, and a consumer who has learned of a good quality is also likely to try other similar products. This is considered an advertisement effect by similarity<sup>8</sup>.

We use a model from Domon (2018) and assume that an imitated product differs from a similar one. In the case of an imitation, counterfeiters cheat consumers by selling a low-quality product as an original in order to make profits. There is always such an incentive for counterfeiters who find no merit in producing products of the same quality as the original. However, regarding a similar product, most consumers realize differences from the original. When difference is unrecognizable, a similar product should be treated as an imitation even if the product has a real difference from the original. A similar package is often problematic and can be sued for design right infringement, but whether a similar product infringes a design right or not can be difficult to judge.

A similar product is considered to demonstrate product differentiation while an imitation is considered a homogeneous product except for quality. To analyze the similar product market, we use Dixit-Stiglitz's CES utility function. A representative consumer has the following utility function,

$$(8) \quad U = \left( \sum_{i=1}^n q_i^\rho \right)^{\frac{1}{\rho}},$$

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<sup>8</sup> As Landes and Posner explain (2003), an efficient transmission of information quality is one of the important roles of trademarks. A similar shape and package work like a joint trademark.

where  $0 < \rho < 1$ , and a budget constraint,

$$(9) \quad I = \sum_{i=1}^n p_i q_i + s / n ,$$

where  $s$  is the cost for consumers to encounter at least one among  $n$  differentiated goods, and  $I$  is a consumer's budget. The cost is interpreted as a kind of search cost to know of the group. With increasing  $n$ , an original and its similar products increase the chance of an encounter in the market, and the cost decreases. An abundance of differentiated goods as a whole plays the role of advertisement to consumers.

We should note that in biological mimicry the total number of mimics in all species affects mutual externalities, but in this model the externalities depend on the number of kinds of products. This assumes that consumers do not pay attention to the quantity but rather to the variety of similar products since the latter stands out in the marketplace. This assumption is meaningful in considering the effectiveness of a design right. When we take into account both quantity and variety, this product differentiation model is not solvable.

In a symmetric situation, each producer sets the same price, and a consumer buys the same amount of goods. Therefore, in any market equilibrium,  $p_i = p$  and  $q_i = q$  ( $i = 1, 2, \dots, n$ ), and  $I = npq + s / n$ .

**Proposition 3:** Given  $p$ , demand increases if and only if  $s / I < n < 2s / I$ .

**Proof.** See Chapter 4 of Domon (2018).

This proposition explains that a positive externality of a new entry toward demand takes place in a certain interval of  $n$ , which depends on the ratio of  $s$  to  $I$ . Since there is always a negative externality if  $s = 0$ , this positive externality compensates for the demerit of a new entry for producers.

We consider more details regarding the impact of  $n$  on profits. A consumer's demand is obtained by solving the following problem,



$$(10) \quad \text{Max}_{q_i} \left( \sum_{i=1}^n q_i^\rho \right)^{\frac{1}{\rho}} \quad \text{s.t.} \quad I = \sum_{i=1}^n p_i q_i + s / n .$$

From the first-order condition for utility maximization, we obtain a usual condition as follows,

$$(11) \quad q_i = q_j \cdot \left( \frac{p_j}{p_i} \right)^{\frac{1}{1-\rho}} .$$

Inserting this into the budget constraint equation, we obtain a demand function as follows,

$$(12) \quad q_j = \left( I - \frac{s}{n} \right) \frac{p_j^{-\sigma}}{\sum_{i=1}^n p_i^{1-\sigma}} , \quad \left( \sigma = \frac{1}{1-\rho} > 1 \right) .$$

Under the assumption that strategic factors in  $\sum_{i=1}^n p_i^{1-\sigma} (\equiv k)$  are negligible or constant for each producer (monopolistic competition), interactions in the game disappear and the problem of profit maximization is easily solved. A representative producer's profit is defined as follows,

$$(13) \quad \pi = pq - f - cq = (p - c) \left( I - \frac{s}{n} \right) \frac{p^{-\sigma}}{k} - f ,$$

where  $f$  and  $c$  are, respectively, a fixed and a marginal cost. The profit is maximized at  $p^* = c\sigma/(1-\sigma)$ , which does not depend on  $n$ .

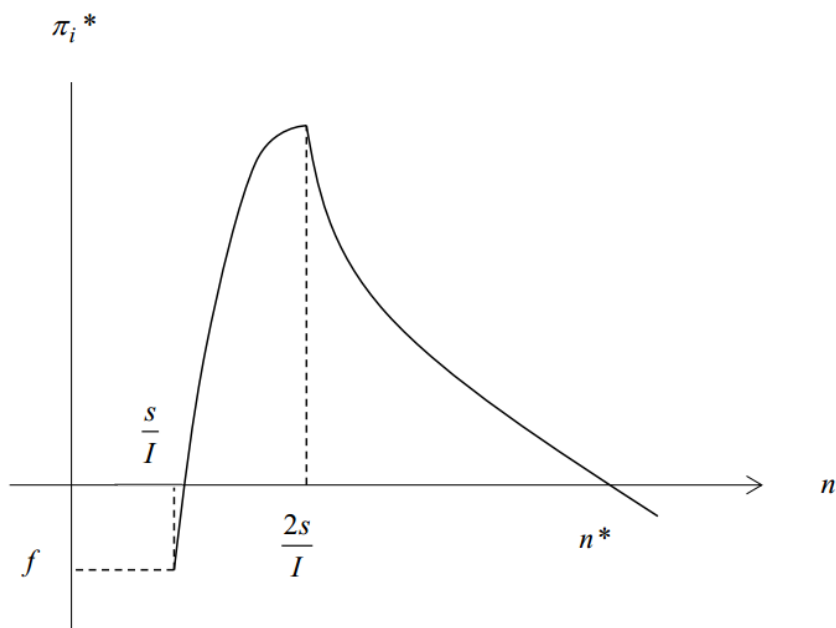
**Proposition 4 (Positive mutual externality):** In an equilibrium, profit increases with  $n$  if and only if  $s/I < n < 2s/I$ , and utility does so if and only if  $n > s/I$ .

**Proof.** See Chapter 4 of Domon (2018).

From Propositions 3 and 4, the interval for a demand expansion corresponds to that for a profit increase.  $\partial \pi^* / \partial n < 0$  for any  $n$  if  $s = 0$ , but a similarity brings about positive mutual externalities in the early stage of a

market entry if  $s > 0$ . If  $n$  increases beyond  $2s/I$ ,  $\pi^*$  decreases. Unlike the imitation, a consumer's utility,  $U^*$ , increases with  $n$ . At least for  $s/I < n < 2s/I$ , social welfare increases with  $n$ , and a similar product benefits not only the consumer but also each producer.

Figure 2.2 depicts a configuration of a profit function in an equilibrium<sup>9</sup>. We see the interval in which a profit increases with  $n$ , a positive frequency-dependent selection. A difference between biological mimicry and a similar product is that consumers' utility also increases in the same interval. In Müllerian mimicry, predators lose a chance to find prey while prey benefit from fewer attacks by predators. However, in a similar product, both producers and consumers can obtain benefits.



**Figure 2.2. An equilibrium in a positive frequency-dependent selection**

Design right should be set for maximizing social welfare, and lawmakers usually have a different incentive from a producer's. To show that, the criterion

<sup>9</sup> See Appendix.

of a fixed cost,  $\hat{f}$ , maximizing social welfare,  $SW^* = n\pi^* + U^*$ , at  $n = 2s/I$  is obtained as follows:

$$(14) \quad \frac{\partial SW^*}{\partial n} = \frac{s}{n^2} \left\{ \frac{p^* - c}{p^*} + \frac{1}{\rho p^{*1/\rho}} \left( I - \frac{s}{n} \right)^{\frac{1}{\rho} - 1} \right\} - f = \frac{I^2}{4s} \left( \frac{p^* - c}{p^*} + \frac{I}{2\rho p^{*1/\rho}} \right) - f = 0.$$

Therefore,

$$(15) \quad \hat{f} = \frac{I^2}{4s} \left( \frac{p^* - c}{p^*} + \frac{I}{2\rho p^{*1/\rho}} \right) (> 0).$$

The following proposition is obtained,

**Proposition 5:** If and only if  $f > (<) \hat{f}$ , lawmakers prefer less (more) entry than a profit-maximizing entry in order to maximize social welfare. If and only if  $f = \hat{f}$ , the incentive of incumbents to welcome an entry coincides with that of lawmakers.

**Proof.** The second-order condition for maximization of  $W$  is satisfied as follows:

$$\frac{\partial^2 SW^*}{\partial n^2} = \underbrace{\frac{s}{p^{*1/\rho} n^3}}_{+} \left[ \underbrace{\frac{1}{\rho} \left( I - \frac{s}{n} \right)^{\frac{1}{\rho} - 1}}_{+} \underbrace{\left\{ \frac{s}{n} \left( \frac{1}{\rho} - 1 \right) \left( I - \frac{s}{n} \right)^{-1} - 2 \right\}}_{G(n)} - 2 \underbrace{\frac{p^* - c}{p^{*1-1/\rho}}}_{+} \right],$$

therefore, the second-order condition is satisfied if  $G(n) \leq 0$  in the above derivative. If  $G(n) \leq 0$ , then  $n$  must be

$$n > \frac{(3\rho - 1)s}{2\rho I} (\equiv g(\rho)) \text{ for } 0 < \rho < 1.$$

$g(\rho)$  is strictly increasing and  $\lim_{\rho \rightarrow 1} g = s/I$ . Because of  $n > s/I$  from  $q > 0$ ,

$G(n) \leq 0$  is satisfied. As a result,  $\partial^2 SW^* / \partial n^2 < 0$ .

Profits of a producer are maximized at  $n = 2s/I$  which is independent of  $f$ . The socially optimal number of producers decreases along with  $f$ . That is, from a total differentiation of  $\partial SW^* / \partial n = 0$ , the following inequality holds,

$$\frac{dn}{df} = - \frac{\partial^2 SW^* / \partial n \partial f}{\partial^2 SW^* / \partial n^2} = \frac{1}{\partial^2 SW^* / \partial n^2} < 0.$$

Both a producer's profit and social welfare are maximized if and only if  $f = \hat{f}$  at  $n = 2s/I$ . Lawmakers prefer less (more) entry if and only if  $f > (<) \hat{f}$  in order to maximize social welfare when a producer maximizes profits at  $n = 2s/I$ .  $\square$

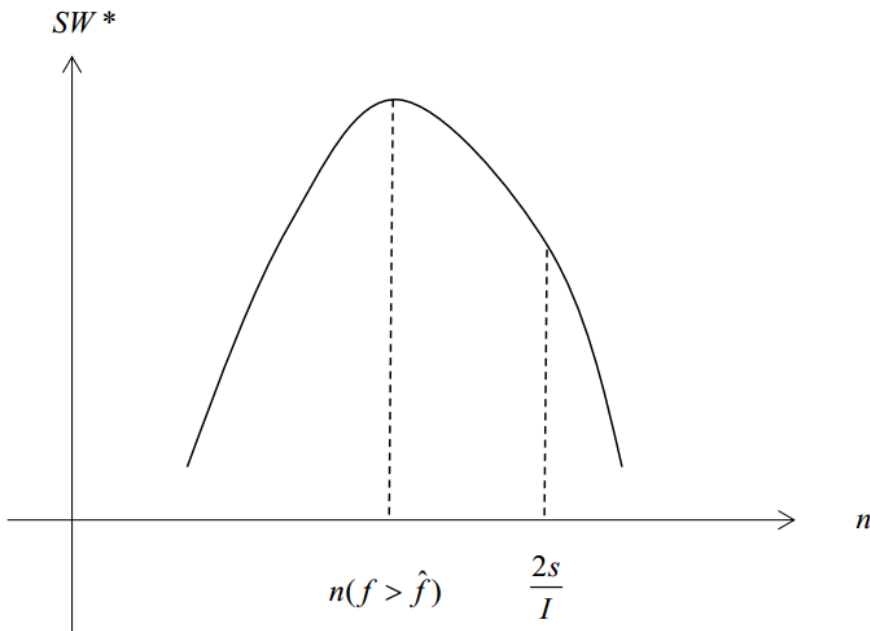


Figure 2.3. Socially excessive incentives for profit-maximizing entries

This proposition explains a difference in incentives between lawmakers and producers with respect to entries. It notes that this discussion differs from that of a socially excessive entry by free entry as in Salop (1979)<sup>10</sup>. Suppose that a design right restricts the number of producers to maximize social welfare. Lawmakers take into account a fixed cost in decision making for that, while a profit-maximizing entry for each producer in competition is not affected by the cost. This proposition also indicates that, under a relatively high fixed cost, lawmakers should restrict entries even though producers' profits increase with entries. Products with low technologies should not be protected excessively in the court and lawmakers should allow an entry against incumbents.

## 5. EXAMPLES OF SIMILAR GOODS

An analogy of biological mimicry to food industries is more suitable than any other industries. We see many food categories with a similar design and taste. Imitations of recipes and designs in dishes are lawful, but those in processed foods are problematic when it comes to judging illegality. There are similar processed foods in terms of package and brand name that are lawful or neglected by original producers<sup>11</sup>.

We will look at three cases of similar processed foods in the snack market. The first is snacks similar to Product O, produced by Kraft Foods in the US and sold worldwide. Major supermarkets in Southeast Asia have a place on the shelf for Product O and its lookalike products whose package colors and/or names are confusing for consumers. Kraft Foods has filed suit in several cases<sup>12</sup> but allows lookalike products at least in Southeast Asia. The second is snacks similar to Product P, produced by Glico in Japan. First, the lookalike snack was produced and sold in South Korea where Glico did not register the design right, and then it was exported from South Korea to foreign countries. In Southeast Asia there

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<sup>10</sup> Regarding an analysis of copyright by a circular model, see Johnson (1985).

<sup>11</sup> In field research addressing fake food from 2014 to 2016, we visited marketplaces in Southeast Asia where law enforcement is very lax. Besides illegal imitations, there we can see processed foods similar to well-known foreign brands.

<sup>12</sup> See INTA Bulletin (2015).

are Thai, Chinese, and South Korean lookalikes of Product P competing with the Japanese original. Consumers there neither know nor mind which is original or not. The third is Product K, produced by Calbee in Japan. In Thailand a lookalike snack was introduced before Calbee entered the market, and it is more popular than the original. The same phenomenon took place in South Korea. When this old Japanese snack was first produced in the 1960s, Calbee did not register a design right abroad because the company did not plan sales in foreign countries. The original has a unique shape that is difficult to produce, but a Thai company imported a food processing machine that was invented by a Japanese machine-builder. In those days, snack food companies did not make much use of patents in order to protect their food processing machines, and the Thai company could imitate the shape and package of the famous snack food, but could not produce the same taste as the original. However, because of the unique shape and taste, it was a hit and is still popular.

These typical lookalikes sold at market are neglected or at least not prosecuted by the original producers. There are several reasons for that. First, an original producer considers the cases as legal. Whether a lookalike product is legal or not depends upon the level of consumers' confusion between the original and a lookalike. In the court a plaintiff often submits a market survey about this confusion to prove illegality. If the level of confusion were low, an original producer could not sue and compete with a lookalike. In the previous section, we showed a further possibility, that an original producer prefers the competition. Second, an original producer may have missed a chance to register the design right abroad. In the last century, markets of developing and emerging nations were not lucrative for developed nations, and most original producers did not feel a necessity for such registration, resulting in expansion of lookalikes abroad<sup>13</sup>. Third, litigation cost abroad could be higher than the financial return

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<sup>13</sup> Some companies realized the importance of design right abroad and sued for infringement. For the example of Japanese companies regarding Pocky, see the case in JETRO 2015, <https://www.jetro.go.jp/world/asia/kr/ip/ipnews/2015/1bfd9e7bffb38398.html>.

from winning. Cost especially hinders litigation by small and medium-sized companies<sup>14</sup>.

We can actually see many lookalike foods and other similar products in the marketplace which are either legal or not prosecuted. As discussed in the previous section, unlike imitations, these products can increase not only producers' profits but also social welfare. Therefore, if an original producer registers a design right and finds infringement, whether to sue or not depends partly upon merit from an advertisement effect in the model, although, in real cases, litigation and other transaction costs also influence the decision.

## 6. CONCLUDING REMARKS

Design right or patent is a minor right among intellectual property rights. However, consumers are quite conscious about visual appearance in a real marketplace. We see many look-alike goods whose visual appearance is an important factor in selection and sales.

Focusing on the effect of visual appearance, this article considered the optimal number of producers using the analogy of biological mimicry. In usual oligopoly models, a new entry always reduces incumbents' profits. However, in biology, there can be new entry that is profitable for incumbents, a so-called positive frequency-dependent selection by Müllerian mimicry. Interpreting the total number of mimics as the number of producers, we explained a positive mutual externality among producers accepting a new entry and a difference in incentives between lawmakers and producers. Whether social welfare increases or not under acceptance depends on fixed cost. In high-tech (low-tech) industries with a high (low) fixed cost, acceptance is likely to be socially excessive (insufficient). The reason is duplication of fixed costs among producers, which do not influence profit maximization by producers but do influence welfare maximization by lawmakers. Such a phenomenon is often seen in R&D investment duplications.

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<sup>14</sup> Concerning food, small farmers exporting products abroad are victimized by trademark infringement and production place misidentification.

In real cases of design right infringement, there are many factors affecting the decisions of whether suing is better for the incumbent and whether judges will admit an infringement. This paper could present an interesting factor which creates benefits for both producers and consumers by new entries into look-alike product markets. This factor has not been discussed in industrial economics and law and economics, and we expect further supplementary and related discussions.

### Appendix: Configuration of the profit curve in Figure 2.2

$$(A1) \quad \frac{\partial \pi^*}{\partial n} = \frac{p^* - c}{p^* n^2} \left( \frac{2s}{n} - I \right) \text{ and } \frac{\partial^2 \pi^*}{\partial n^2} = \frac{2(p^* - c)}{p^* n^3} \left( I - \frac{2s}{n} \right).$$

Therefore,

$$(A2) \quad \frac{\partial \pi^*}{\partial n} \geq 0 \text{ and } \frac{\partial^2 \pi^*}{\partial n^2} \leq 0 \text{ for } \frac{s}{I} \leq n \leq \frac{2s}{I},$$

$$(A3) \quad \frac{\partial \pi^*}{\partial n} < 0 \text{ and } \frac{\partial^2 \pi^*}{\partial n^2} > 0 \text{ for } n > \frac{2s}{I}.$$

**Acknowledgments:** This article was financially supported by a Waseda University Grant for Special Research Projects (Project number: 2021C-601), and JSPS KAKENHI (Grant Number 20K01716).



## REFERENCES

- Anderson, S. P. and Renault, R., 1999, "Pricing, Product Diversity, and Search Costs: A Bertrand-Chamberlin-Diamond Model," *RAND Journal of Economics*, 30 (4), 719-735.
- Beebe, B., 2006, "An Empirical Study of the Multifactor Tests for Trademark Infringement," *California Law Review*, 94, 1581-1654.
- Dixit, A. K. and Stiglitz, J. E., 1977, "Monopolistic Competition and Optimum Product Diversity," *American Economic Review*, 67 (3), 297-308.
- Domon, K., 2018, *An Economic Analysis of Intellectual Property Right Infringements- Field Studies in Developing Countries*, Palgrave Macmillan.
- Herrmann, A., Rossberg, R., Huber, F., Landwehr, J. R., and Henkel, S., 2011, "The Impact of Mimicry on Sales – Evidence from Field and Lab Experiments," *Journal of Economic Psychology*, 32 (3), 502-514.
- Hotelling, H., 1929, "Stability in Competition," *Economical Journal*, 39, 41-57.
- INTA Bulletin, 2015, "Analysis of Trade Dress Cases by Brazilian Courts," 20 (70), International Trademark Association.  
([https://www.inta.org/INTABulletin/Pages/Trade\\_Dress\\_in\\_Brazilian\\_Courts\\_7020.aspx](https://www.inta.org/INTABulletin/Pages/Trade_Dress_in_Brazilian_Courts_7020.aspx))
- Johnson, W. R., 1985, "The Economics of Copying," *Journal of Political Economy*, 93 (1), 158-174.
- Kuksov, D., 2004, "Search Costs and Endogenous Product Design," *Marketing Science*, 23 (4), 490-499.
- Landes, M. W. and Posner, A. R., 2003, *The Economic Structure of Intellectual Property Law*, Belknap Press.
- Müller, F., 1879, "Ituna and Thyridia: A Remarkable Case of Mimicry in Butterflies." *Transactions of the Entomological Society of London* 1879, xx–xxiv.
- Nowak, M. A., 2006, *Evolutionary Dynamics: Exploring the Equations of Life*, Harvard University Press.

- Ohzaki, N., 2009, *Gitaino Shinka*, Kaiyusha, Japan.
- Pastine, I. and Pastine, T., 2002, "Consumption Externalities, Coordination, and Advertising," *International Economic Review*, 43 (3), 919-943.
- Rafiq, M. and Collins, R., 2006, "Lookalikes and Customer Confusion in the Grocery Sector: An Exploratory Survey," *International Review of Retail, Distribution and Consumer Research*, 6 (4), 329-350.
- Richards, T. J., Hamilton, S. F., and Yonezawa K., 2017, "Variety and the Cost of Search in Supermarket Retailing," *Review of Industrial Organization*, 50, 263–285.
- Ruxton G. D., Sherratt T. N., and Speed M. P., 2004, *Avoiding Attack: The Evolutionary Ecology of Crypsis, Warning Signals and Mimicry*. Oxford University Press.
- Salop, S. C., 1979, "Monopolistic Competition with Outside Goods," *Bell Journal of Economics*, 10 (1), 141-156.
- Sherratt, T. N., 2008, "The Evolution of Müllerian Mimicry," *Naturwissenschaften*, 95(8), 681–695.
- Smith, J. M., 1982, *Evolution and the Theory of Games*, Cambridge University Press.
- Stigler, G. J., 1961, "The Economics of Information," *Journal of Political Economy*, 69 (3), 213-225.
- Stivers, A. and Tremblay, V. J., 2005, "Advertising, Search Costs, and Social Welfare," *Information Economics and Policy*, 17, 317–333.
- Vázquez, F. J. and Watt, R., 2011, "Copyright Piracy as Prey–Predator Behavior," *Journal of Bioeconomics*, 13(1), 31–43.

## Chapter 3

# Law Enforcement with Criminal Organizations and Violent Conflict

*Ken Yahagi*

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### 1. INTRODUCTION

An economic analysis, originally proposed by Becker (1968), of illegal activities by individuals has been extended to criminal organizations' activities (Garoupa 2000,2007).<sup>1</sup> The presence of criminal organizations—such as Mafia-type organizations, drug trafficking organizations, gangs, and pirates—in illegal markets makes a difference in the market structures of illegal activities. Traditionally it is said that criminal organizations operate monopolistically, as in Buchanan (1973) and Gambetta (1993).

Violent conflict is among the mechanisms of such monopolized illegal markets, and the use of violence has been associated with the economic profits from a monopolized market (Gambetta 1993). Furthermore, conflicts can be employed to acquire positions of leadership and power within a family. Through these violent conflicts, a criminal organization endogenously monopolizes illegal markets. As observed in reality, conflicts over market opportunities among criminal organizations and clans occur constantly.<sup>2</sup>

Since the use of violence among criminal organizations causes huge negative impacts on our society, law enforcers have to pay attention to preventing the use of violence while developing strategies against these organizations. However, while it is recognized that such conflicts have been repeated within and across criminal organizations throughout their long history,

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<sup>1</sup> Overviews of the illegal activities of individual criminals are provided by Garoupa (1997) and Polinsky and Shavell (2000).

<sup>2</sup> For example, Catino (2014) investigates how and when inter and intra-organizational conflicts have happened by describing three representative criminal organizations in Italy, the Camorra, Cosa Nostra and `Ndrangheta. Similar violent conflicts also occur among drug trafficking organizations in Mexico and in other countries.

it is unclear how criminal organizations use violence in competing with each other. More specifically, it is uncertain whether strict enforcement may cause more violent conflicts and stronger territorial competition among criminal organizations. If we can understand the mechanisms driving the economic incentives of criminal organizations to use violence, we may be able to avoid the huge costs caused by the emergence of violent conflict.

Based on these motivations, this paper explores the motivations and economic incentives of criminal organizations or clans in attempting to acquire territories in inter- and intra-organization competition through violent conflicts. Thus, we focus on violence as a tool for the acquisition of territory in turf wars among criminal organizations. Aiming to understand this process, we construct a simple framework of a law enforcement model in which criminal organizations (mafias) control an illegal market by demanding “royalties” from lower-level criminals. While this model is based on Garoupa (2000) and Yahagi (2019), we extend their framework by incorporating violent conflict between criminal organizations whereby one organization can attack a rival in order to acquire monopolized control rights over the illegal market. We investigate and compare the economic incentives in two different situations: (1) one monopolistic mafia's profits from controlling an illegal market after winning the conflict and (2) duopolistic mafias' profit from a coexisting illegal market. Furthermore, we introduce violence and its effects in an explicit manner by introducing comparative advantage, such as a military power difference, in violent conflicts. We also introduce the difference of enforcement between monopoly- and duopoly-controlled markets, which represents how criminal organizations effectively coordinate their activities and use resources such as information and trafficking routes to escape from authorities' enforcement actions.

This paper shows that as long as the power imbalance between criminal organizations is large, the stronger criminal organization has an incentive to engage in violent conflict. However, if enforcement against a monopolized illegal market works better compared to a duopolistic situation, we can reduce the need for violence and avoid violent conflicts with strict enforcement commitments against the monopolized market. On the other hand, as long as the

power balance between criminal organizations is kept, each mafia is likely to have less incentive to engage in violent conflict. However, if sanctions against monopoly-controlled markets do not work well, each criminal organization may choose to commit violence. Therefore, in contrast to the previous situation, strong intervention against illegal markets may not be effective as long as there is an appropriate balance of power between mafias. In summary, authorities should direct attention to keeping a good balance between mafias or to severe enforcement commitments against the monopolistic market under an imbalance of power to avoid the costs of violence.

Catino (2014) investigates how the management of conflict control and violence (both within and outside the organization) can differ, both in quantitative (the number of crimes) and qualitative terms (the types of homicide) depending on the presence of higher levels of coordination. However, this paper does not use an economic framework. The most similar paper is Flores (2016), which considers criminal organizations competing for illegal productions and using violence as sabotage against a rival. We employ a different approach in modeling the use of violence. The use of violence is intended to monopolize the market, and it changes the market structure. Then, we extend the discussion of Flores (2016) and provide different implications for the use of violence by criminal organizations. There are some papers, e.g., Mansour et al. (2006) and Poret and Tejedo (2006), that discuss relations between an endogenous organizational structure and government sanctions; we assign a different role to criminal organizations, i.e., not as illegal goods producers but rather as regulators of illegal markets and the possible use of violent conflict. Our results extend recent analyses of the emergence of more hierarchical organization of mafias, e.g., Bandiera (2003), Dimico et al. (2017), Leeson (2007), Leeson and Rogers (2012), Leeson and Skarbek (2010), Skarbek (2010; 2012), Sobel and Osoba (2009) and Yahagi (2018).

The remainder of this paper is organized as follows: in Section 2, by extending the basic model of criminal organizations presented in Garoupa (2000) and Yahagi (2019), we analyze two market structures: (1) a monopolistic criminal organization after a violent conflict and (2) duopolistic criminal

organizations. We then compare the two structures. Finally, we conclude with our results.

## **2. BASIC MODEL**

In this section, we introduce a basic law enforcement model with criminal organizations. First, by extending the basic model of criminal organizations presented in Garoupa (2000), we consider criminal organizations as regulators of illegal markets, e.g., the market for illegal drugs, prostitution, kidnapping, or private protection. Following the model of Yahagi (2019), the primary actors in this model are potential offenders, such as lower-ranked subordinates, illicit consumers, dealers, and so on, two mafias (higher-ranked criminals or a boss), e.g., Mafia 1 and Mafia 2, and the government as the law enforcement authority. Potential offenders with lower rankings must pay a fee for permission to enter a criminal market controlled by a high-ranking boss of an organization. This transaction is a notable characteristic of criminal organizations and is often observed in many of their activities, including in the provision of protection and in transactions of illegal goods (Gambetta 1993).

In this paper, we consider the possibility of the coexistence of two criminal organizations. For example, if there are distinct steps in illicit transactions, each criminal organization has its responsibility at each step. Real-life examples do exist: tentative cooperation between mafias and local gangs, e.g., Sicilian Mafia members and Nigerian gangs, Mexican drug cartels and American street gangs, and Japanese mafia (yakuza) and emerging loosely organized groups called "han-gure". New collaborators help large criminal organizations to operate smuggling and trafficking of illegal sex workers and drugs, as well as to engage in racketeering activities in new territories. In this process, each criminal organization obtains mutually beneficial illegal profits.

On the contrary, if this market is controlled by a single mafia, this mafia can obtain a monopolistic illegal profit by controlling all steps in illicit transactions. Based on these different market structures, we investigate two situations. First, an illegal market is controlled by a single mafia. Another

situation is that Mafia 1 and Mafia 2 coexist and control the illegal markets. Following the analysis, we consider these scenarios with formal settings. After that, we consider the possibility of endogenous monopolization through violent conflict in the next section.

### 2.1. Monopolistic Criminal Organization

The analysis in this section is basically the same approach as in Garoupa (2000). There are potential offenders (lower-ranked criminals), one criminal organization (monopolistic Mafia), and the government. Let  $b$  be the illegal gain or demand for illegal goods by potential criminals or end consumers. We assume that  $b$  is uniformly distributed over  $[0,1]$ , while the government and the Mafia cannot observe its value. Potential offenders must pay  $e_M$  to the Mafia to

engage in illegal activities under the threat of being sanctioned by the government. We refer to this monetary payment as extortion. The Mafia chooses  $e_M$  to maximize its extortion profit.<sup>3</sup>

Let  $s^M(a)$  be the sanction on potential offenders in the case of a monopoly-controlled illegal market, where  $a$  is the cost of enforcing severe sanctions and

$$s_a^M > 0, s^M(0) = 0.<sup>4</sup>$$

Therefore, the condition for whether offenders enter a criminal market is given by  $b \geq s^M + e_M$ . Thus, the Mafia chooses  $e_M$  to maximize the monopolized economic profit;

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<sup>3</sup> In this paper, we assume that there is no cost for conducting extortion. Though enforcing sanctions may be costly, the cost of issuing a threat is negligible.

<sup>4</sup> We assume that sanctions are imposed on lower-ranked criminals who engage in a criminal market. This influences the economic profits of mafias flowing from illegal market control; thus, such sanctions are an important tool for controlling a mafia's economic profits.

$$\pi^M = \int_{s^M + e_M}^1 e_M db.$$

## 2.2. Duopolistic Criminal Organizations

While the main settings are the same as for the monopolistic criminal organization, we follow Yahagi (2019) and introduce two criminal organizations, Mafia 1 and Mafia 2. The illegal market is controlled by both of them. For example, if there are two steps, such as smuggling and distribution in illicit transactions, the steps are controlled by different organizations. The total extortion paid from potential offenders to Mafia 1 and Mafia 2 becomes  $e_1 + e_2$ ,

where  $e_i$  is the transfer to Mafia  $i = 1, 2$ . Furthermore, we consider the sanction against potential offenders  $s^D(a)$ , where  $a$  is the cost of enforcing severe sanctions and  $s_a^D > 0$ ,  $s^D(0) = 0$ .

We assume that since collusion between these criminal organizations tends to be tentative, each Mafia pursues its own economic profits independently.<sup>5</sup> Therefore, Mafia 1 maximizes its profits by choosing the royalty from Mafia 2 " $e_1$ ", and Mafia 2 maximizes its profit with the royalty from lower-ranking criminals " $e_2$ ".

The condition for potential offenders to engage in illegal activities is  $b \geq s^D + e_1 + e_2 = b_D$ . Thus, the profit functions for Mafia 1 and 2 are given by

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<sup>5</sup> Usually, criminal organizations cannot rely on legal institutions to enforce their rules, and it becomes difficult to enforce coordinated activities among different criminal organizations.



$$\pi_1^D = \int_{s^D + e_1 + e_2}^1 e_1 db \text{ and } \pi_2^D = \int_{s^D + e_1 + e_2}^1 e_2 db.$$

### 2.3. Timing of the Game

Since our motivation is to see how violent conflict between mafias may or may not happen, we also consider their economic incentives for engaging in violent conflict to establish the right to control the market. Therefore, the game proceeds as follows. In stage 1, the government chooses a level of enforcement effort. In stage 2, if one of the mafias chooses to engage in violent conflict, the mafias have to fight with each other. The winner can control the market. The loser obtains nothing. If a war does not happen, the mafias control the market duopolistically. At stage 3, mafia(s) can engage in extortion activities. For simplicity, we assume that Mafia 1 and Mafia 2 choose  $e_1$  and  $e_2$  for their

economic profits at the same time. Then, potential offenders decide whether to engage in illegal activities.

## 3. ANALYSIS

### 3.1. Monopolistic Criminal Organization

In this section, we derive the expected profit through violent conflict. Since the winner mafia chooses  $e_M$  to maximize  $\pi^M$ , the first-order condition is

given by

$$\frac{d\pi^M}{de_1} = 1 - s^M - 2e_M = 0.$$

Therefore, we obtain  $e_M = (1 - s^M)/2$ . The expected profit of the Mafia is

$$\pi^M = (1 - s^M)^2/4.$$

We introduce the stage of violent conflict following the conflict theory of Garnkel and Skaperdas (2007) and Konrad (2009). In order to define the expected profit of violent conflict, we introduce  $g_1$  and  $g_2$  as the violent

resources investment of Mafia 1 and Mafia 2 to win conflicts.<sup>6</sup> The probability of winning for each mafia depends on the ratio of the amount of invested resources. Let  $p_i$  be the probability of mafia  $i = 1, 2$  winning; thus, we have

$p_1 = \beta g_1 / (\beta g_1 + g_2)$  and  $p_2 = g_2 / (\beta g_1 + g_2)$ , where  $\beta \geq 1$ . The value  $\beta$  represents

the relative ability of Mafia 1 in terms of effectiveness of investments, and we assume that the value is exogenously given. This setting means that if every mafia invests the same amount of resources, the probability of Mafia 1 winning is greater than that of Mafia 2 winning (e.g., Mafia 1 has the advantage of incumbency). Therefore, the expected profits for Mafia 1 and Mafia 2 are

$$\pi_1^w = \frac{\beta g_1}{\beta g_1 + g_2} \pi^M - g_1 \quad \text{and} \quad \pi_2^w = \frac{g_2}{\beta g_1 + g_2} \pi^M - g_2.$$

Following the standard optimization condition, the optimal choices of  $g_1$  for Mafia 1 and  $g_2$  for Mafia 2 are

$$\frac{d\pi_1^w}{dg_1} = \frac{\beta g_2}{(\beta g_1 + g_2)^2} \pi^M - 1 = 0,$$

$$\frac{d\pi_2^w}{dg_2} = \frac{\beta g_1}{(\beta g_1 + g_2)^2} \pi^M - 1 = 0.$$

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<sup>6</sup> We assume that wars occur between criminal organizations. That is, offenders—those extorted—do not play any role in violent conflicts.

Therefore, we obtain  $g_1 = g_2 = \beta\pi^M/(1 + \beta)^2$ . The expected profit of violent conflict for Mafia 1 is  $\pi_1^W = (\beta/(1 + \beta))^2 \pi^M$  and  $\pi_2^W = (1/(1 + \beta))^2 \pi^M$ . Therefore, since Mafia 1 has advantage in the use of violent conflict ( $\beta > 1$ ), Mafia 1 has more incentive to engage in violent conflict than Mafia 2.

### 3.2. Duopolistic Criminal Organizations

We follow the same analysis as in the previous section. The first-order conditions for Mafias 1 and 2 are

$$\frac{d\pi_1^D}{de_1} = 1 - s^D - 2e_1 - e_2 = 0 \quad \text{and} \quad \frac{d\pi_2^D}{de_2} = 1 - s^D - 2e_2 - e_1 = 0.$$

Therefore, we obtain  $e_1 = e_2 = (1 - s^D)/3$ .

Thus, there exist certain externalities and conflicts in pursuing economic profits. Increased extortion by one mafia will lead to reduced extortion by the other because the mafias share the same pool of extortion gains, thus resulting in a tragedy of the commons problem. The expected profits of Mafias 1 and 2 are  $\pi_1^D = \pi_2^D = (1 - s^D)^2/9$ .

### 3.3. Incentive for Violent Conflict and Endogenous Monopolization

In this section, we introduce the possibility of endogenous monopolization with violent conflict. In the following analysis, we assume that  $s^M = a$  and  $s^D = ka$ , where  $k > 1$  or  $k < 1$ . This is important to consider whether severe enforcement induces monopolistic profit with violent conflict to become more attractive or not.

In the case of (a)  $k > 1 (s^D > s^M)$ , enforcement against offenders in an illegal market controlled by duopolistic mafias is effective compared to that against offenders controlled by a monopolistic mafia. This is likely to happen, for example, if the organization's hierarchical structure is good at coordination and organization management for, e.g., sharing information about behaviors of enforcers and effective use of trafficking resources, such as trafficking routes, to discipline offenders and escape from enforcement of authorities.

On the other hand, in the case of (b)  $k < 1 (s^M > s^D)$ , offenders are likely to be punished if the market is controlled by a monopolistic mafia. This is likely to happen, for example, if enforcers pay attention to the winning mafia and develop efficient strategies by reallocating the total resources for the monopolistic mafia.<sup>7</sup>

As we explored, the stronger Mafia 1 has more incentive to engage in the use of violence, so the following analysis focuses on the incentives of Mafia 1. By incorporating  $s^M = a$  and  $s^D = ka$ , the simple comparison indicates

$$\pi_1^W = \left[ \frac{\beta}{1+\beta} \right]^2 \underbrace{\left[ \frac{1-a}{2} \right]^2}_{\pi^M} > \left[ \frac{1-ka}{3} \right]^2 = \pi_1^D.$$

Since this comparison seems to be complicated, at first, we consider the case of  $a = 0$  and  $s^M = s^D = 0$ . In this case, we need to compare

$\pi_1^W = [\beta/(1+\beta)]^2 [1/2]^2 > [1/3]^2 = \pi_1^D$ . Therefore, in the case of  $a = 0$  (e.g.,

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<sup>7</sup> In other theoretical papers concerning the illegal drug market, such as Mansour et al. (2006) and Poret and Tejedo (2006), agents of mafias are less likely to be captured in an oligopolistic market compared to a monopolistic one because the government must allocate limited enforcement resources to each mafia.

$s^M = s^D = 0$ ), if  $\beta > 2$ , we have  $\pi_1^W > \pi_1^D$ , and if  $2 > \beta$ , we have  $\pi_1^D > \pi_1^W$ .<sup>8</sup>

However, in the case of  $a > 0$ , this incentive can differ. Then, we have the following results.

**PROPOSITION 1** (i) In the case that one mafia has an advantage in violent conflict ( $\beta > 2$ ), (ia) if  $k > 1$ , we always have  $\pi_1^W > \pi_1^D$ . However, (ib) if  $k < 1$ , there may exist  $a^* = [\beta/2(1 + \beta) - 1/3]/[\beta/2(1 + \beta) - k/3]$  satisfying  $\pi_1^W = \pi_1^D$  and  $\pi_1^W > \pi_1^D$  in the case of  $a^* > a$  and  $\pi_1^D > \pi_1^W$  in the case of  $a > a^*$ .

On the other hand, (ii) neither Mafia has a special advantage in violent conflict ( $2 > \beta$ ), (iia) if  $k > 1$ , there may exist  $a^{**} = [1/3 - \beta/2(1 + \beta)]/[k/3 - \beta/2(1 + \beta)]$  and  $\pi_1^D > \pi_1^W$  in the case of  $a^{**} > a$  and  $\pi_1^W > \pi_1^D$  in the case of  $a > a^{**}$ . However, (iib) if  $k < 1$ , we always have  $\pi_1^D > \pi_1^W$ .

**Proof**

In this proof, we compare  $\pi_1^D = [(1 - s^D)/3]^2$  and  $\pi_1^W = [\beta/(1 + \beta) \times (1 - a)/2]^2$  by comparing  $(1 - ka)/3$  and  $\beta/(1 + \beta) \times (1 - a)/2$ .

(i) In the case of  $\beta > 2$ , if  $k > 1$ , we do not have  $a \in [0, 1]$  satisfying  $(1 - ka)/3 > \beta/(1 + \beta) \times (1 - a)/2$  (and  $\pi_1^D > \pi_1^W$ ) because an increase of  $a$  diverges the difference in each profit (Proposition (ia)). However, in the case of

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<sup>8</sup> This can be derived by comparing  $\beta/2(1 + \beta)$  of  $\pi_1^W$  and  $1/3$  of  $\pi_1^D$ .

$k < 1$ , because an increase of  $a$  makes the difference in each profit small, there exists  $a^*$  satisfying  $(1 - ka^*)/3 = \beta/(1 + \beta) \times (1 - a^*)/2$  (and  $\pi_1^W = \pi_1^D$ ). Thus, we have  $a^* = [\beta/2(1 + \beta) - 1/3]/[\beta/2(1 + \beta) - k/3]$ . Then, if  $a$  becomes larger,  $\pi_1^W < \pi_1^D$  (Proposition (ib)).

(ii) In the case of  $\beta < 2$ , if  $k > 1$ , because an increase of  $a$  makes the difference in each profit small and there exists  $a^{**}$  satisfying  $(1 - ka^{**})/3 = \beta/(1 + \beta) \times (1 - a^{**})/2$  (and  $\pi_1^W = \pi_1^D$ ). Simple calculation indicates that  $a^{**} = [1/3 - \beta/2(1 + \beta)]/[k/3 - \beta/2(1 + \beta)]$ . Then, when  $a$  becomes larger ( $a > a^{**}$ ),  $\pi_1^W$  is larger than  $\pi_1^D$  (Proposition (iia)). However, in the case of  $k < 1$ , because an increase of  $a$  diverges the difference of each profit, we do not have  $a \in [0, 1]$  satisfying  $(1 - ka)/3 < \beta/(1 + \beta) \times (1 - a)/2$  (and  $\pi_1^D < \pi_1^W$ ) (Proposition (iib)). Q.E.D

These results indicate that if one mafia is good at violent conflict ( $\beta > 2$ ), this stronger mafia has an incentive to engage in violent conflict (Proposition 1(i)). However, this decision, e.g., engaging in violent conflict, becomes less attractive if the monopolistic profit decreases with severe sanctions compared to the duopolistic profit ( $k < 1$  and  $s^M > s^D$ ). In this case, strong intervention to make monopolistic profits decrease (small  $\pi^M$  with large  $a > a^*$ ) can be desirable to avoid violent conflicts because  $\pi^M$  becomes less attractive

(Proposition (ia)). On the other hand, if severe sanctions cannot work against a monopolistic mafia ( $k > 1$  and  $s^M < s^D$ ), authorities cannot do anything to prevent wars for any  $\alpha$  (Proposition (ib)). However, in this case, although it is difficult to avoid violence, severe sanctions still can be helpful to reduce the monopolized illegal profits and the need for the violence, which might cause another externality. This can be confirmed since total resources used for violence are  $g_1 + g_2 = 2\beta/(1 + \beta)^2 \times \pi_1^M$ , so smaller  $\pi_1^M$  leads to less total violence.

In summary, if one mafia has an advantage in conflict, strict enforcement efforts should be employed to avoid the violent conflict as in Proposition (ia) or to reduce the violence-related costs even if violent conflict is inevitable, as in Proposition (ib).

On the other hand, as long as the power balance between mafias is maintained ( $\beta < 2$ ), each mafia has less incentive to engage in violent conflict (Proposition 1(ii)). However, this decision becomes less attractive if enforcement against a monopoly-controlled market is less effective than against a duopoly-controlled market ( $k > 1$  and  $s^M < s^D$ ). In this case, since severe enforcement may cause more  $\pi^M$  than  $\pi^D$ , in order to avoid the emergence of violent conflict, lax punishment can be desirable, which is the main message (Proposition 1 (iia)). In the case of  $k < 1$  and  $s^M > s^D$ , we do not have to care about the possibility of violent conflict (Proposition 1 (iib)). However, in this case, sanctions against the market with duopolistic mafias are ineffective, and we might have a trade-off between effective enforcement and avoiding violent conflict.

In summary, in the case that (1)  $\beta > 2$  with  $s^M < s^D$  ( $k > 1$ ), (2)  $\beta > 2$  with  $s^M > s^D$  ( $k < 1$ ) and  $a < a^*$ , and (3)  $\beta < 2$  with  $s^M < s^D$  ( $k > 1$ ) and  $a > a^{**}$ , criminal

organizations engage in the use of violence. Therefore, as long as there exists an imbalance of power between mafias, severe sanctions against lower ranked-offenders can be desirable to reduce the monopolized illegal profits and the need for violence.<sup>9</sup> On the other hand, if authorities pay attention to maintaining a good balance between mafias, strong intervention to reduce illegal profits will not be necessary. That is, authorities should prioritize keeping a good balance between mafias ( $\beta < 2$  with small  $a$ ) or severe enforcement efforts against

lower-ranked offenders to lower monopolized profits under the imbalance of mafia power ( $\beta > 2$  with large  $a$ ) to prevent the costs of violence.

#### 4. DISCUSSION AND CONCLUDING REMARKS

While it seems that criminal organizations tend to engage in monopolistic operations, violent conflicts among Mafias are being reported within and across countries. While law enforcement authorities should pay attention to endogenous monopolization through violent conflict, appropriate law enforcement policies remain uncertain. Motivated by these considerations, this paper provides a simple law enforcement model in which two criminal organizations that pursue extortion profits by controlling an illegal market can resort to violence against their coexisting criminal organizations to win and monopolize the illegal market.

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<sup>9</sup> For example, since leaders of criminal organizations play an important role in terms of coordination of the organizations' activities, damaging them can cause an imbalance of power among criminal organizations. This point is discussed in the empirical literature of combating strategies against drug trafficking organizations, e.g., Mexican drug cartels. Some papers, e.g., Dickenson (2014), Phillips (2015), Duran-Martinez (2015), Dell (2015), Osorio (2015), and Barnes (2021), show that severe attitudes of law enforcement authorities cause the use of violence among trafficking organizations. However, in order to obtain more insightful understandings, we need more general frameworks for drug trafficking organizations' strategies.



This paper investigates how and when criminal organizations have an incentive to engage in violent conflict. First, if an appropriate power balance is not accomplished, the superior criminal organization tends to use violence. Under severe punishment against illegal markets, it may be possible to avoid violent conflict as long as the monopolized profit becomes less attractive. Second, if appropriate power balance is maintained, unnecessary law enforcement against illegal markets may induce violent conflict. In cases where punishment against a monopoly-controlled market is ineffective, one criminal organization may have an incentive to engage in violent conflict. Then, severe punishment can be detrimental if neither criminal organization has superior violence. That is, in order to make the use of violence less attractive, authorities should pay attention to keeping a good balance between criminal organizations or continuing severe enforcement efforts against monopolized illegal profits.

This paper has some insufficiencies, but its approach is the first step to understanding the relation between law enforcement and the economic incentives of criminal organizations to engage in violent conflict. As a future work, we need to examine the following directions. First, we need to consider how law enforcement strategies affect the degree of imbalance of powers in violent conflicts among criminal organizations and differences of deterrence between monopoly- and duopoly-controlled markets. Second, this paper assumes that mafias are pure extractive institutions, which do not provide any service or good. Since our approach focuses only on exploitative roles in legal markets by demanding royalties from lower-ranked offenders, we need to extend their roles as providers of some goods and services in illegal markets. Then, this may indicate differences in terms of the role of lower-ranked offenders, which provide different implications for enforcement strategies and market structures.<sup>10</sup> Additionally, we need to examine more specific law enforcement strategies against criminal organizations and investigate socially

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<sup>10</sup> In this respect, it also can be important to consider market size, which may depend on where criminal organizations operate. Furthermore, since our results are based on monopoly or shared extortion rather than on splitting illegal profits, such an extension may provide different implications.

optimal enforcement strategies. For example, enforcement strategies should depend on the level of illegal profits and the costs of using violence. If we can consider more sophisticated frameworks, we expect to obtain more important results for the relation between our framework and concrete examples associated with empirical literature.

**Acknowledgements:** I would like to thank Koji Domon, Giovanni Ramello, Michael Yuan, and the participants in the conference “Law and Economics on Illicit Trades” for their helpful comments and suggestions.

## REFERENCES

- Bandiera, O, 2003, "Land reform, the market for protection, and the origins of the Sicilian Mafia: Theory and evidence," *Journal of Law, Economics, and Organization*, 19 (1), 218-244.
- Barnes, N, 2021, "The logic of criminal territorial control: Military intervention in Rio de Janeiro," *Comparative Political Studies* forthcoming.
- Becker, G.S, 1968, "Crime and punishment: An economic approach," *The Journal of Political Economy*, 76 (2), 169-217.
- Buchanan, J.M, 1973, "A defense of organized crime?," Rottenberg, S. ed., *The Economics of Crime and Punishment*, American Enterprise Institute for Public Policy Research.
- Catino, M, 2014, "How do mafias organize?: Conflict and violence in three mafia organizations," *European Journal of Sociology/Archives Europeennes de Sociologie*, 55 (2), 177-220.
- Catino, M, 2015, "Mafia rules. The role of criminal codes in mafia organizations," *Scandinavian Journal of Management*, 31 (4), 536-548.
- Dell, M, 2015, "Trafficking networks and the Mexican drug war," *American Economic Review*, 105 (6), 1738-79.
- Dickenson, M, 2014, "The impact of leadership removal on Mexican drug trafficking organizations," *Journal of Quantitative Criminology*, 30 (4), 651-676.
- Dimico, A., Isopi, A., and Olsson, O, 2017, "Origins of the Sicilian Mafia: The market for lemons," *Journal of Economic History*, 77 (4), 1083-1115.
- Duran-Martinez, A, 2015, "To kill and tell? State power, criminal competition, and drug violence," *Journal of Conflict Resolution*, 59 (8), 1377-1402.
- Flores, D, 2016, "Violence and law enforcement in markets for illegal goods," *International Review of Law and Economics*, 48, 77-87.
- Gambetta, D, 1993, *The Sicilian Mafia: The Business of Private Protection*, Harvard University Press.

- Garfinkel, M. R. and Skaperdas, S, 2007, "Economics of conflict: An overview," Sandler, T. and Hartley, K. ed., *Handbook of Defense Economics: Defense in a Globalized World* (2), Elsevier.
- Garoupa, N, 1997, "The theory of optimal law enforcement," *Journal of Economic Surveys*, 11 (3), 267-295.
- Garoupa, N, 2000, "The economics of organized crime and optimal law enforcement," *Economic Inquiry*, 38 (2), 278-288.
- Garoupa, N, 2007, "Optimal law enforcement and criminal organization," *Journal of Economic Behavior and Organization*, 63 (3), 461-474.
- Konrad, K. A, 2009, *Strategy and Dynamics in Contest*, Oxford University Press.
- Leeson, P. T, 2007, "An-arrgh-chy: The law and economics of pirate organization," *Journal of Political Economy*, 115 (6), 1049-1094.
- Leeson, P. T., and Rogers, D. B, 2012, "Organizing crime," *Supreme Court Economic Review*, 20, 89-123.
- Leeson, P. T., and Skarbek, D. B, 2010, "Criminal constitutions," *Global Crime*, 11 (3), 279-297.
- Mansour, A., Marceau, N., and Mongrain, S, 2006, "Gang and crime deterrence," *Journal of Law, Economics and Organization*, 22 (2), 315-339.
- Neumann, M., Lotzmann, U., and Troitzsch, K. G, 2017, "Mafia war: Simulating conflict escalation in criminal organizations," *Trends in Organized Crime*, 20 (1), 139-178.
- Osorio, J, 2015, "The contagion of drug violence: Spatiotemporal dynamics of the Mexican war on drugs," *Journal of Conflict Resolution*, 59 (8), 1403-1432.
- Paoli, L, 2014, "The Italian Mafia," Paoli, L. Ed., *The Oxford Handbook of Organized Crime*, Oxford University Press.
- Phillips, B. J, 2015, "How does leadership decapitation affect violence? The case of drug trafficking organizations in Mexico," *The Journal of Politics*, 77 (2), 324-336.

- Polinsky, A.M. and Shavell, S, 2000, "The economic theory of public enforcement of law," *Journal of Economic Literature*, 38 (1), 45-76.
- Poret, S., and Tejedro, C, 2006, "Law enforcement and concentration in illicit drug markets," *European Journal of Political Economy*, 22 (1), 99-114.
- Skarbek, D, 2010, "Putting the ``con" into constitutions: The economics of prison gangs," *The Journal of Law, Economics, and Organization*, 26 (2), 183-211.
- Skarbek, D, 2012, "Prison gangs, norms, and organizations," *Journal of Economic Behavior and Organization*, 82 (1), 96-109.
- Sobel, R. S., and Osoba, B. J, 2009, "Youth gangs as pseudo-governments: Implications for violent crime," *Southern Economic Journal*, 75 (4), 996-1018.
- Yahagi, K, 2018, "Welfare effects of forming a criminal organization," *European Journal of Law and Economics*, 46 (3), 359-375.
- Yahagi, K, 2019, "Law enforcement with criminal organizations and endogenous collaboration," *European Journal of Law and Economics*, 48 (3), 351-363.

## Chapter 4

# Analysis of Counterfeiting in China's E-commerce: The Example of Pinduoduo

*Zhang Zhengyi*

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## 1. INTRODUCTION

Counterfeiting can be a very serious problem in jurisdictions with poor intellectual property protection. It is a prominent problem, with a serious impact on long-term economic development, in China. With the expansion of the Internet, counterfeit sales activities have migrated from offline to online, exhibiting many new characteristics. This paper summarizes the problems arising from the sales of counterfeits since China's reform and opening up, as well as the current situation of counterfeit sales in China. It analyzes the reasons for this situation, compares the differences between counterfeit sales via e-commerce and in offline markets, and summarizes the reasons why the online market has become the main means for counterfeit trafficking. Through the platform enterprise Pinduoduo, which has attracted attention in recent years because of its rapid development and the problem of selling counterfeits, this paper analyzes the behaviors of consumers and businesses engaging in the process of online counterfeit sales.

## 2. SALES STATUS OF COUNTERFEITS

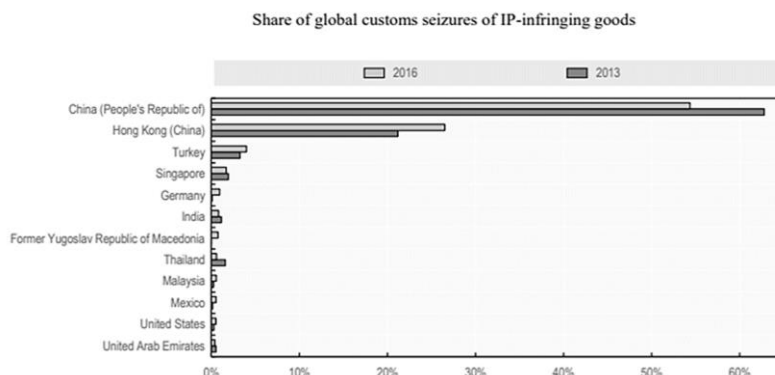
### *2.1. Offline Trafficking Channels*

1) The history and current status of counterfeits in China Since the implementation of the “reform and opening-up” policy in 1978 in China, manufacturing industries and the market economy have been developing rapidly, and the range of commodity types has greatly expanded. Known as “the world’s workshop,” China exports plenty of cheap goods to the countries of the world. But the problem of counterfeits among its products has become increasingly serious.

In China, the problem of selling counterfeits exists in multiple industries. In 2006, the scale of China's counterfeits market exceeded 137 billion yuan, and market spot checks showed that counterfeits accounted for 8.1% of all goods (Feng, 2006). According to data from the State Administration of Market Regulation, the total value of banned counterfeits exceeded 11.1 billion yuan between April 2001 and April 2004, and the direct and indirect economic losses were estimated to exceed 585.5 billion yuan. Since then, China has strengthened enforcement and the banning of counterfeits, but the scale of the counterfeit market had reached 5 billion yuan by 2011<sup>1</sup>. Furthermore, based on OECD surveys, the sales volume of counterfeits from China (excluding the Hong Kong Region) represented 50% of the world's goods seized for IP infringement between 2014 and 2016. Despite a decreasing trend year by year, China is still the area presenting the most serious problem of counterfeits<sup>2</sup>.

## 2) Reasons for the high number of counterfeits in China

There are various reasons that fake commodities have become so common in China. I'll now examine some of these reasons.



**Figure 4.1. Differences in provenance economies of counterfeit and pirated trade, & 2016 (OECD)**

<sup>1</sup> China State Administration for Market Regulation, 2005, “Guojia zhijianzongju zhongquanchuji sannian chahuojialiechanpin jiazhi 111yuan,” in Chinese, China Anti-Counterfeiting, (1), 2.

<sup>2</sup> OECD/EUIPO, 2019, Trends in Trade in Counterfeit and Pirated Goods, Illicit Trade, OECD Publishing.

First, the mass of Chinese people remain low-income, and have weak purchasing power for high-priced goods. Based on data from the World Bank, the proliferation of counterfeits in China was extremely serious from 2005 to 2015. Meanwhile, China's per capita GDP in this period was about USD \$1000-\$8000.<sup>3</sup> Despite the nation's economic scale, the average income level is still relatively low.<sup>4</sup> In terms of China's income structure, the low-income population still makes up more than half of the national total. According to survey results from the China Social Science Survey Center of Peking University, China's Gini coefficient has increased rapidly since 1995, reaching 0.73 by 2012, which meant that 1% of Chinese owned over one-third of the country's assets. Emphasizing the importance of the problems of the low-income population, Chinese Premier Li Keqiang indicated in a speech at the National People's Congress in May 2020 that there are still 600 million people in China whose monthly income is less than 1000 yuan. Based on data from the National Bureau of Statistics, the annual disposable income of the lowest-income families (the lowest 20% of the total) in 2019 was 7,380 yuan, and the monthly per capita disposable income was 615 yuan. For low-income families (the lowest 40% of the total) annual disposable income was 11,580 yuan, and the monthly per capita disposable income was 965 yuan<sup>5</sup>. For this reason, low-income people do not have the ability to consume high-priced goods and brand-name goods. Meanwhile, the demand for counterfeits is huge. According to a questionnaire about Chinese consumption, 69% of consumers still purchase even if they clearly know goods are fake, and another 18% say they would consider buying counterfeits<sup>6</sup>. Characterized by low price, reasonable quality and rich variety, counterfeits are favored by a great number of consumers.

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<sup>3</sup> World Bank national accounts data, and OECD national accounts data files. (<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2020&locations=CN&start=1960&view=chart>)

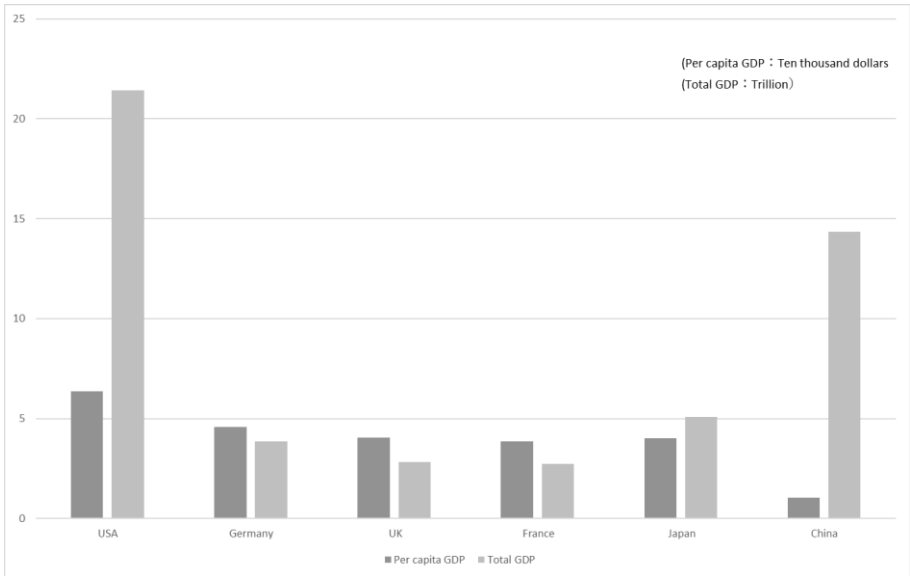
<sup>4</sup> Xie, Y., 2014, *Zhongguo minsheng fazhanbaogao 2014*, in Chinese, Peking University Press, Beijing.

<sup>5</sup> According to the database of the China Bureau of Statistics.

<sup>6</sup> Alamusu and Yao, Z., 2016, *Dianzishangwuhan yedashuju dajia 2.0*, in Chinese, Policy and Law Committee of China Electronic Commerce Association.



There is a large demand for counterfeits, which meets the needs of the current stage of China's social and economic development.



**Figure 4.2. Comparison of total GDP and per capita GDP of countries in the world in 2020 (World Bank)<sup>7</sup>**

Next, China's economic structure places manufacturing at its center, and there are many OEM factories. Basic facilities and the conditions for the production of counterfeits are widespread, and the production cost is low. Since the reform and opening-up, China has developed rapidly, and the fastest-growing sector among all industries is processing and manufacturing. In 2019, the scale of China's manufacturing industry reached 26.92 trillion yuan, accounting for 28.1% of manufacturing in the world<sup>8</sup>. It was predicted that China would have 380,000 manufacturing enterprises in 2020, covering almost the total range of product production<sup>9</sup>. Due to the effects of industrial agglomeration, the production cost of commodities has become very low.

<sup>7</sup> World Bank national accounts data, and OECD national accounts data files. (<https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2020&locations=CN&start=1960&view=chart>)

<sup>8</sup> According to a report of the 2020 National Conference on Industrial Intelligence of the Ministry of Industry and Information Technology of China.

<sup>9</sup> According to the database of the China Bureau of Statistics.

Moreover, OEM enterprises may have the appropriate manufacturing techniques but lack a brand account for the majority of these enterprises. In the process of producing counterfeits, there are no R&D and marketing expenses, so huge profits are possible in a short time. Therefore, plenty of small- and medium-sized factories choose to produce counterfeits. Counterfeit sellers seek low investment and high return, so the lower costs of counterfeiting are obviously conducive to the development of the counterfeiting industry.

A third reason is that laws to address counterfeits are imperfect and neither fully observed nor strictly enforced. Enforcement against counterfeit goods in China has the following problems (Sun 2011).<sup>10</sup> i ) The supervision of law enforcement departments over the production and trafficking of counterfeits is insufficient. ii ) No industry protection organizations exist. iii ) There is a lack of cooperation between law enforcement departments, which results in regulatory lacunae of supervision. iv ) Legal provisions need more subjective judgment. Punishment for producing counterfeits is not severe enough to deter violators. Some businessmen take risks producing and selling counterfeits just for the purpose of making money. Based on the reporting of Alibaba's legal department, 81% of persons found guilty of selling counterfeits in 2017 received probation, while the actual implementation rate for sentencing was only 19%.

## ***2.2. Counterfeits in E-commerce***

With the development of e-commerce, online selling has become the most important channel to merchandise counterfeits. China's e-commerce scale ranks second in the world. On the basis of data from the Digital China Construction and Development Report 2017, the scale of China's e-commerce reached 27.2 trillion yuan, with a year-on-year increase of 20.3%, accounting for 32.9% of GDP, of which online shopping accounted for 23.1%.<sup>11</sup> The main reasons that

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<sup>10</sup> Song, L., 2011, "Qianxi zhongguojiahuo xianxiang cunzaide yuanyin", in Chinese, Technology and Market, 18(2), 84.

<sup>11</sup> According to Digital China Construction and Development Report 2017

the e-commerce market has become a concentration of counterfeits are as follows.

1) The online market has a huge scale and has undergone rapid development. According to data from China's State Council, the online retail market scale will reach 11.76 trillion yuan in 2020, an increase of 10.9% over the previous year, accounting for a quarter of overall retail sales<sup>12</sup>. Compared with offline markets subject to geographical restrictions, the scalability of online markets presents a huge advantage. Price-sensitive low-income groups are the primary buyers of fake goods. Relatively cheap online market prices attract low-income consumer groups. On the other hand, having almost zero barriers to entry in e-commerce can help enterprises reduce costs, providing a suitable environment for development for fake-goods-manufacturing enterprises with weak economic ability. What's more, due to reduced marketing and R & D costs, fake goods sellers can provide lower prices, which enhance competitiveness. For both demand and supply, the online market has satisfactorily met the necessary conditions and built a suitable trading platform.

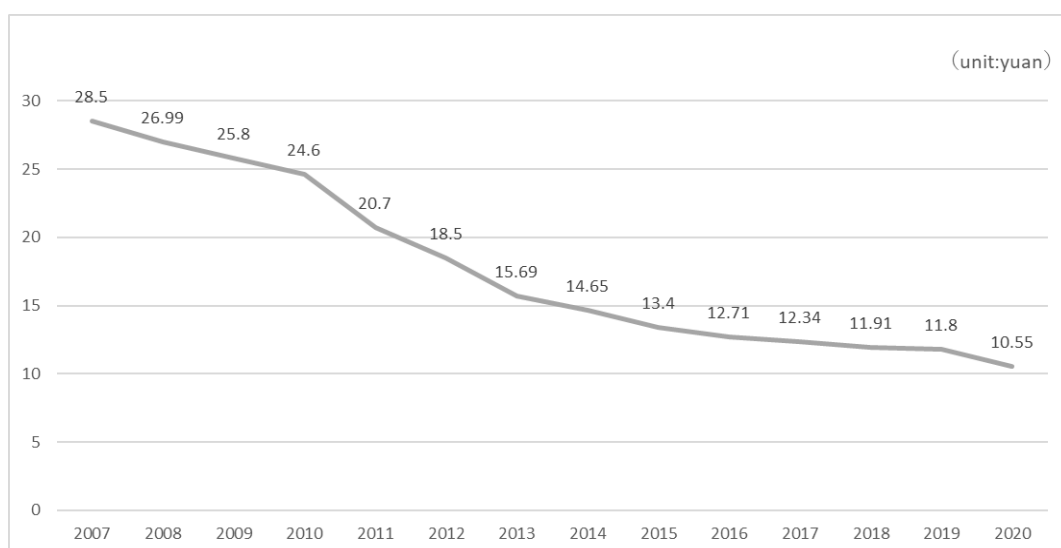
2) In contrast to the offline market, the online market has more information asymmetries. Consumers can only receive limited information, such as text descriptions and photos, when shopping online, and it is difficult to judge the authenticity of this information. The limitations of information make consumers more likely to be deceived, increasing the possibility that they may buy fake products without being aware of them. This has increased the number of counterfeit sales, making the internet the primary choice for many counterfeit sellers.

3) The logistical cost of online shopping is decreasing along with the rapid growth in China's logistics industry. A survey from the Industrial Research Institute shows that logistics enterprises have increased greatly with the development of e-commerce. The average logistics cost was 28.5 yuan per

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<sup>12</sup> According to the State Council of China  
([http://www.gov.cn/shuju/2021-01/25/content\\_5582319.htm](http://www.gov.cn/shuju/2021-01/25/content_5582319.htm))

order in 2007, but this has decreased to 10.55 yuan per order in 2020, which is one-third of what it was ten years ago<sup>13</sup>. The low price of logistics reduces the opportunity costs of fake goods sellers and increases the sales volume of fake goods. Consumers may choose to return the item if they accidentally buy a fake product; at this time, the freight will become an opportunity cost for fake sellers. When the profit of selling fake goods is greater than the opportunity costs, a foundation for a business model exists. Therefore, the low logistics cost has become one of the reasons for selling fake goods.



**Figure 4.3. Average logistics price per order from 2007 to 2020<sup>14</sup>**

4) The imperfection of the legal system makes it more expensive for consumers to defend their rights. Banning fake goods in the online market involves different challenges from those of offline trafficking. Online marketing

<sup>13</sup> Foresight Business Information Co., 2021, *Report of Market Competitive Analysis and Competitive Strategy on China Courier Companies (2021-2026)*, Shenzhen (<https://bg.qianzhan.com/report/detail/ca8e57ffb9934bf5.html?v=title>)

<sup>14</sup> According to Foresight Business Information Co., 2021, *Report of Market Competitive Analysis and Competitive Strategy on China Courier Companies (2021-2026)*, Shenzhen (<https://bg.qianzhan.com/report/detail/ca8e57ffb9934bf5.html?v=title>)

mainly presents the following problems (Guo 2016)<sup>15</sup>: ① There is a problem of unclear subjects of jurisdiction in the sales processes of online retail platforms. The State Council of China has put forward general requirements for relevant information about platform operators, but each provincial government has its own rules and regulations, so it is difficult to clarify to whom the various rules apply when e-commerce takes place across provinces. ② Plenty of unlicensed goods circulate in the online market. Although these goods are prohibited by law, it is difficult to find and prohibit them in advance due to the possibilities for concealment presented by the Internet and the fast circulation speed of products. ③ The lack of counterfeit identification agencies in the online marketplace means that consumers have no channel to protect their rights based on their own judgment. Courts find it hard to accept cases on account of the absence of test reports. ④ The reporting process for fraud cases is not clear. Consumers may be unable to find a way to complain except through the platform they wish to complain about.

### **3. THE DEVELOPMENT OF PINDUODUO AND THE CURRENT SITUATION OF SALES OF COUNTERFEITS**

#### ***3.1. The Situation of Sales of Counterfeits***

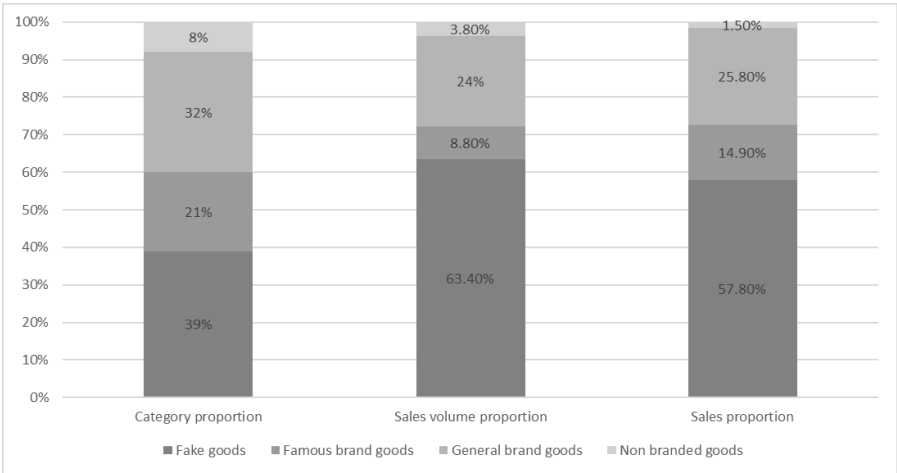
Pinduoduo, an online sales platform established in 2015, has been getting more attention in recent years because of its growth and its sales of counterfeits. Its main business area is online retail, similar to Amazon and two Chinese retail platforms, Taobao and JD. According to data from China's Ministry of Commerce, the scale of China's online retail in 2015 was 3.82 trillion yuan, accounting for 12.7% of the total retail industry. Among online retailers,

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15 According to Guo, X., 2016, "Jiahuozhili zaidianshangshidai zaoyude falvkunjing jiyingdui," in Chinese, Journal of Hunan University of Science and Technology, 19(2), 98-104.

(<https://gb.global.cnki.net/kcms/detail/detail.aspx?filename=XTGS201602018&dbcode=CJFQ&dbname=CJFD2016&v=>)

Alibaba accounted for 65.2%, and JD accounted for 23.2%. In other words, these two enterprises account for more than 80% of the market share<sup>16</sup>. Pinduoduo started up business in an oligopolistic market and grew rapidly, but it has attracted extensive attention owing to its problems with selling fake goods. The records of the Shanghai Municipal Court contain 239 cases involving sales by Pinduoduo in the three years from 2017 to 2019, ranking it first among all online retailers in sales cases, accounting for 72.4% of the total cases<sup>17</sup>. A related institutional survey shows that from June 27 to July 27, 2018, there were 39 fake commodities among its 100 best-selling commodities, accounting for 63.4% of total sales volume and 57.8% of the total sales amount<sup>18</sup>.



**Figure 4.4. The 100 commodities with the highest sales volume at Pinduoduo**

In July 2018, Skyworth, a Chinese household appliance brand issued a statement asserting that all the goods sold on Pinduoduo were fake. A famous writer, Yuanjie Zhang, also issued an announcement, insisting that Pinduoduo stop selling pirated copies of his works.

<sup>16</sup> According to the database of the Ministry of Commerce of China

<sup>17</sup> According to a report of the Shanghai Municipal Court, *Trial white paper on disputes over online shopping contracts involving professional anti-counterfeiting in 2017-2019*, (<http://tingshen.court.gov.cn/court/1105>)

<sup>18</sup> According to the institutional survey at (<http://industry.caijing.com.cn/20180730/4493106.shtml>)

### ***3.2. Reasons for the Rapid Development of Pinduoduo***

1) Segmentation of the online retail market China's online retail market can be divided into three categories. One is the B2C business model represented by Alibaba's Taobao, which is composed of many businesses and platforms. The second is a B2C model represented by JD and sold by its enterprises alone, similar to an online version of Walmart. Pinduoduo, however, uses a third, new, online sales model, utilizing linkages through social software. The characteristic of this enterprise is that sales behavior is highly dependent on social software and sales are improved through network leveraging of interpersonal relationships. Pinduoduo's early development was highly dependent on WeChat, China's largest social software app.

According to Chinese industrial intelligence statistics, from the perspective of Pinduoduo's user structure, Pinduoduo's users are mainly concentrated in the small cities and villages of China, with this demographic accounting for more than 57% of users, significantly higher than for Taobao and Jingdong. Its user demographics are also characterized by low education and youth. The proportion of people under the age of 35 is 80.8%, and the proportion without university education is 68.2%<sup>19</sup>.

In 2016, the US Department of Commerce blacklisted Taobao because of its involvement in sales of counterfeits. As the censorship of Taobao has become more strict, a large number of fake sellers have moved to Pinduoduo. Pinduoduo's user groups are mainly low-income groups, but its sales volume increased rapidly during this period. As it has become difficult to sell counterfeits on other platforms, this part of the demand is satisfied through Pinduoduo. Consumer groups differentiated by income allow Pinduoduo to avoid positive competition with Taobao and JD.

#### **2) The strategic relationship between Pinduoduo and Tencent**

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<sup>19</sup> Zhiyan Consulting, 2018, *2018 nian zhongguo pinduoduo shichangyonghu jizhongdu fenxi*, in Chinese.

Tencent is the second largest shareholder of Pinduoduo, holding 16.9% of Pinduoduo's shares<sup>20</sup>. It has made a great contribution to the early user growth of Pinduoduo. Specifically, it has given its help in the following ways.

—It has opened its WeChat and QQ platforms to Pinduoduo, allowing Pinduoduo to access their user bases to quickly develop its own users. And Pinduoduo can perform analyses with Tencent's user database information to match commodities and consumers, making advertising delivery more efficient.

—Tencent provides Pinduoduo with an online payment system. At present, China's online payment system is dominated by Tencent's WeChat Pay and Alibaba's Alipay payment systems, and many competitors are directly competing with Alibaba. If there were no help from Tencent's WeChat Pay system, it would be very difficult to achieve business models. For Tencent, the large payment demand of Pinduoduo also expands the utilization of WeChat payment.

—Because of the confrontational relationship between Tencent and Alibaba in various fields, Tencent has blocked Alibaba in its own business, used its monopoly position to help Pinduoduo develop, and made Taobao unable to carry out business on WeChat. Taobao users cannot share goods purchased at Taobao on WeChat, which reduces the convenience of Taobao.

### ***3.3. Economic Analysis of Pinduoduo's Business Model***

Pinduoduo has gained a large number of low-income users in a short time by selling non-branded goods and counterfeits. The following measures were adopted.

1) Through SNSs, users spontaneously share the goods on Pinduoduo with friends, helping Pinduoduo expand its number of users. In this way, users can get certain commodity discounts or rewards. Users are both consumers and sellers on Pinduoduo. This has allowed Pinduoduo to expand rapidly, and also to save huge advertising expenses.

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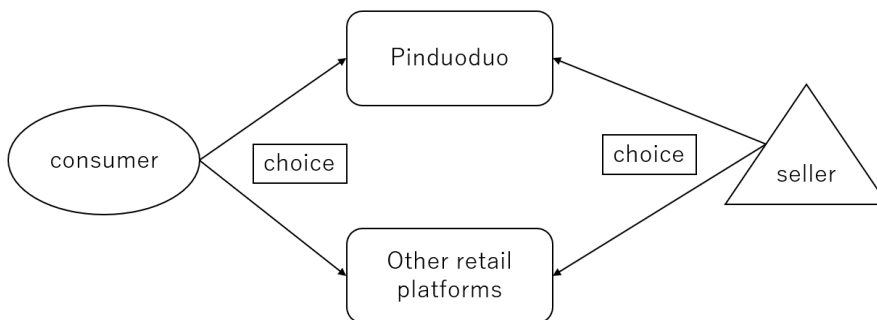
<sup>20</sup> According to the *Annual Report of Pinduoduo 2019* and the *Annual Report of Pinduoduo 2020*.



2) Pinduoduo enables users to participate in games it has developed itself, which improves the use time of the software and also means that users receive more advertisements. Users can also get additional discounts by participating in Pinduoduo games and activities, which greatly improves the sales volume of products.

3) Pinduoduo regulates the relationship between supply and demand through technical means, so that businesses can better grasp demand, thereby reducing costs and sales prices and increasing sales. At the same time, it helps consumers buy goods at lower prices, achieving a win-win situation.

As an online retail platform, Pinduoduo has the characteristics of a two-sided market. Its business model is composed of a B2C general consumer market and a B2B enterprise market. Consumers can choose the platform, and sellers will also choose the platform.



**Figure 4.5. Pinduoduo's business model composition**

Consumers judge situations according to their own utility, and they buy goods through sales channels with higher utility. Similarly, sellers will choose their own platform with higher profits to sell their goods. We assume that the utility when consumers buy goods from Pinduoduo is  $u_p$ , and the utility obtained when purchasing goods on other platforms is  $u_o$ . Although the goods purchased on the two platforms are exactly the same, due to the fear of many counterfeits on Pinduoduo and poor shopping experience, consumers have low

utility with Pinduoduo shopping, so that  $u_p < u_o$ . As the sales price of Pinduoduo is different from that of other platforms, we define Pinduoduo as  $P_p$  and other platforms as  $P_o$ , with  $P_o > P_p$ . In order to get a lower price at Pinduoduo, consumers have to participate in Pinduoduo games or activities, which costs consumers' time and reduces consumers' utility. We assume that this part of consumption is  $\alpha$ . At this time, the utility functions for consumers when purchasing goods from the two platforms are as follows:

$$(1) U_o = \theta u_o - P_o \quad \text{for other platforms}$$

$$(2) U_p = \theta u_p - P_p - \alpha \quad \text{for Pinduoduo}$$

We assume that consumers are evenly distributed between 0 and 1, and that when the consumer's utility is greater than 0 ( $U_o > 0, U_p > 0$ ), the consumer chooses to buy goods, so the consumer's demand  $D_o$  for other platforms is

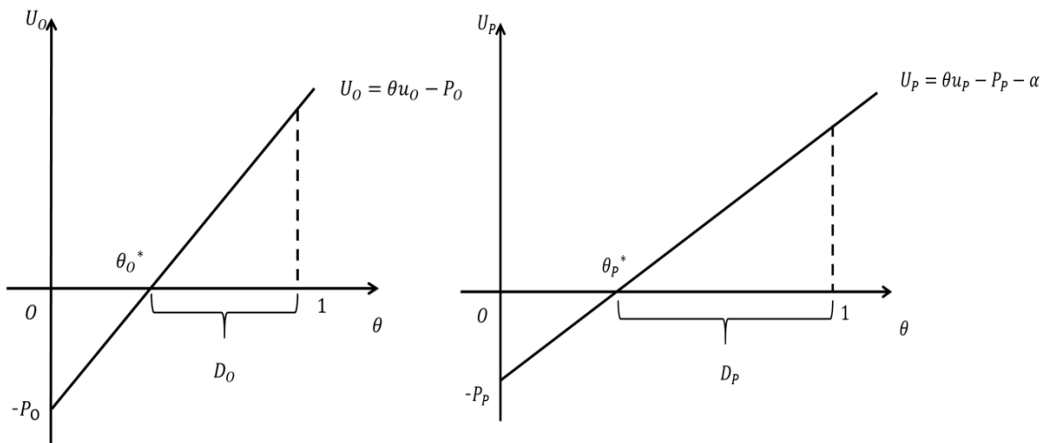


Figure 4.6. Demand of goods on each platform

$$(3) \quad D_o = 1 - \theta_o^* = 1 - \frac{P_o}{u_o} \quad \text{for other platforms}$$

And the consumer's demand for Pinduoduo will be:

$$(4) \quad D_p = 1 - \theta_p^* = 1 - \frac{P_p + \alpha}{u_p} \quad \text{for Pinduoduo}$$

At this time, marketers act both as producers and as sellers; they have a monopoly position on each platform; and their profits on the two platforms are:

$$(5) \quad \pi_o = P_o D_o - S = P_o \left(1 - \frac{P_o}{u_o}\right) - S \quad \text{for other platforms}$$

$$(6) \quad \pi_p = P_p D_p = P_p \left(1 - \frac{P_p + \alpha}{u_p}\right) \quad \text{for Pinduoduo}$$

In order to maximize profits, the monopoly price is

$$\begin{aligned} \frac{d\pi_o}{dP_o} = 1 - \frac{2P_o}{u_o} = 0 &\Rightarrow P_o^* = \frac{1}{2}u_o \\ \frac{d\pi_p}{dP_p} = 1 - \frac{2P_p + \alpha}{u_p} = 0 &\Rightarrow P_p^* = \frac{1}{2}(u_p - \alpha) \end{aligned}$$

Therefore, the exclusive profit under the exclusive price is

$$(7) \quad \pi_o^* = P_o^* \left(1 - \frac{P_o^*}{u_o}\right) - S = \frac{1}{4}u_o - S \quad \text{for other platforms}$$

$$(8) \quad \pi_p^* = P_p^* \left(1 - \frac{P_p^* + \alpha}{u_p}\right) = \frac{(u_p - \alpha)^2}{4u_p} \quad \text{for Pinduoduo}$$

Because platforms are mutually exclusive and consumers only buy goods from platforms with low prices, users can only choose one platform to sell their own goods. At this time, the user will compare the expected revenue from the two platforms.

$$(9) \quad \Delta\pi = \pi_P^* - \pi_O^* = \frac{(u_P - \alpha)^2}{4u_P} - \frac{1}{4}u_O + S$$

Because of  $\theta \leq 1$ , and using the utility function of the consumer with the highest utility,

$$(10) \quad U_P^{MAX} = \theta u_P - P_P^* - \alpha = u_P - \frac{1}{2}(u_P - \alpha) - \alpha$$

Since highest utility should be greater than zero  $U_P^{MAX} > 0$ ,

$$u_P - \frac{1}{2}(u_P - \alpha) - \alpha > 0$$

So at this time, we get  $\alpha < u_P$ .

Assuming that the seller's profit from Pinduoduo is greater than that on other platforms

$$\Delta\pi > 0 \Rightarrow \pi_P^* > \pi_O^* \Rightarrow \frac{(u_P - \alpha)^2}{4u_P} - \frac{1}{4}u_O + S > 0.$$

So there exists a cut-off point

$$(11) \quad \alpha^* = u_P - \sqrt{u_P u_O - 4u_P S}.$$

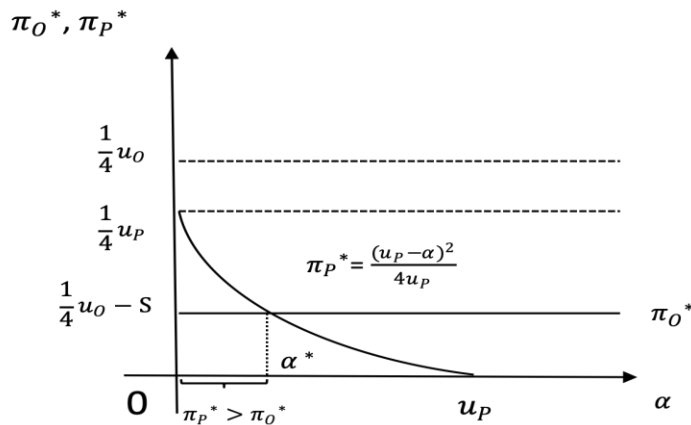


Figure 4.7. Profit on each platform

Therefore, when  $\alpha < \alpha^*$ , even if sellers know that selling their goods at Pinduoduo will reduce consumers' shopping experience, they will still choose to sell at Pinduoduo for higher profits. When  $\alpha > \alpha^*$ , sellers will give up on Pinduoduo because they earn more profit on other platforms. Of course, other online platforms can also adjust the size of  $s$  to block Pinduoduo according to their own sales strategy  $(\pi_O^B, S_B)$ . When  $S_B < \frac{1}{4}u_O - \frac{1}{4}u_P$ , no matter what strategy Pinduoduo uses, it doesn't matter that sellers are more profitable at Pinduoduo. Other retail platforms can achieve a block on Pinduoduo. But when other retail platforms are not actively blocking, Pinduoduo can also improve its income by charging service fees  $(\pi_P^C, S_P, \alpha)$ . This allows Pinduoduo to maximize profits by making adjustments to  $S_P$  and  $\alpha$ .

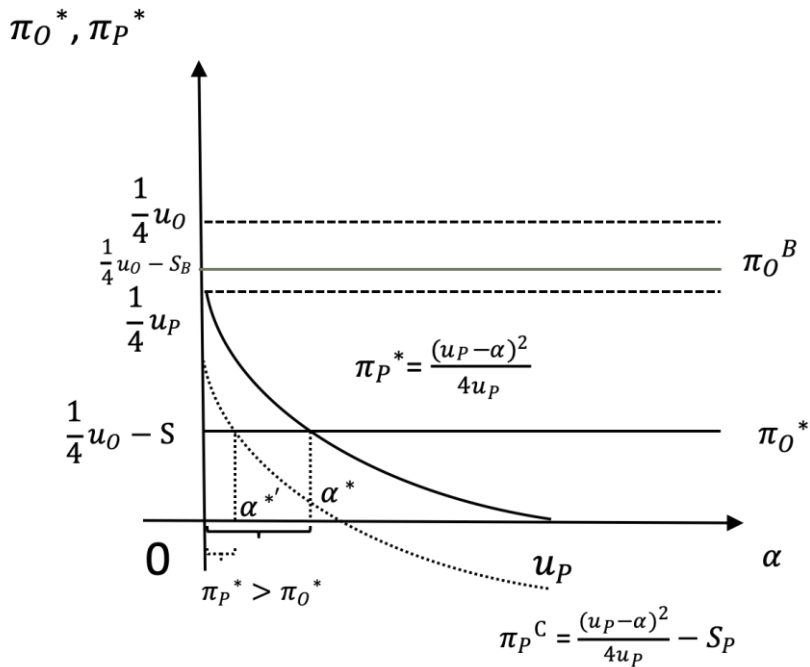


Figure 4.8. Strategies for sellers and platforms

#### **4. CONCLUDING REMARKS**

Through this analysis we can know the specific challenges facing the sales of counterfeit goods in China. We can also understand the reasons underlying the current situation of China's counterfeit goods problem, which make it difficult to solve. Sales of counterfeit goods have shifted from offline to online because the online environment is more conducive to the concealment of counterfeit sales and can provide more profit. At the same time, online counterfeit takedowns face many new challenges that need to be addressed. Counterfeit sellers will be more inclined to choose emerging online retail platforms, where there are more lenient regulations. And depending on the platform's provision of subsidized activities, sellers may be more likely to gain more consumers as well as profits in a short period of time. Existing platforms can create a deterrent to new platforms by reducing their own fees and/or prices. The new platforms can also achieve higher profits by adjusting their fees and activity costs. This paper does not discuss whether the blocking behaviors of existing platforms against new platforms will lead to more profits or the principles Pinduoduo should follow when adjusting its own fees and campaign efforts. These matters will be further analyzed in a future paper.

## REFERENCES

- Alamusi and Yao, Z., 2016, "Dianzishangwuhang yedashuju dajia 2.0," in Chinese, Policy and Law Committee of China Electronic Commerce Association.  
(<http://report.idx365.com/>)
- China Ministry of Industry and Information Technology, 2019, *Report of The 2020 National Conference on Industrial Intelligence of the Ministry of Industry and Information Technology of China*, Beijing.  
(<https://baijiahao.baidu.com/s?id=1687466173432359576&wfr=spider&for=pc>)
- China National Bureau of Statistics database.  
(<https://data.stats.gov.cn/easyquery.htm?cn=C01>)
- China State Administration for Market Regulation, 2005, "Guojia zhijianzongju zhongquanchuji sannian chahuo jialiechanpin jiazhi 111 yiyuan," in Chinese, *China Anti-Counterfeiting*, (1), 2.  
(<https://mall.cnki.net/magazine/magadetail/ZGFW200502.htm>)
- Ezoe, N., 2009, "Two-sided markets and competition policy," in Japanese, *Seinan Gakuin University Collected Papers on Economics*, 43(4), 1-23.
- Feng, Y., 2006, "Counterfeits management in China," in Chinese, Shandong University.  
(<http://cdmd.cnki.com.cn/Article/CDMD-10422-2006165386.htm>)
- Foresight Business Information Co., 2021, *Report of Market Competitive Analysis and Competitive Strategy on China Courier Companies (2021-2026)*, Shenzhen.  
(<https://bg.qianzhan.com/report/detail/ca8e57ffb9934bf5.html?v=title>)
- 4th Digital China Construction Summit, 2021, *Digital China Construction and Development Report 2017*, Beijing.  
([https://www.sohu.com/a/240901100\\_99934049](https://www.sohu.com/a/240901100_99934049))
- Guo, X., 2016, "Jiahuozhili zaidianshangshidai zaoyude falvkunjing jiyingdui," in Chinese, *Journal of Hunan University of Science and Technology*, 19(2), 98-104.  
(<https://gb.global.cnki.net/kcms/detail/detail.aspx?filename=XTGS201602018&dbcode=CJFQ&dbname=CJFD2016&v=>)

Ministry of Commerce of China database.

(<http://www.mofcom.gov.cn/>)

OECD/EUIPO, 2019, *Trends in Trade in Counterfeit and Pirated Goods*, Illicit Trade, OECD Publishing.

(<https://www.oecd.org/corruption-integrity/reports/trends-in-trade-in-counterfeit-and-pirated-goods-g2g9f533-en.html>)

Pinduoduo, *Annual Report of Pinduoduo 2019*.

(<https://investor.pinduoduo.com/events-and-presentations/presentations>)

Pinduoduo, *Annual Report of Pinduoduo 2020*.

(<https://investor.pinduoduo.com/events-and-presentations/presentations>)

Shanghai Municipal Court, 2020, Trial white paper on disputes over online shopping contracts involving professional anti-counterfeiting in 2017-2019, Shanghai.

(<http://tingshen.court.gov.cn/court/1105>)

Song, L., 2011, “Qianxi zhongguojiahuo xianxiang cunzaide yuanyin,” in Chinese, *Technology and Market*, 18(2), 84.

(<https://www.cnki.com.cn/Article/CJFDTotat-JSYS201102049.htm>)

State Council of China.

([http://www.gov.cn/shuju/2021-01/25/content\\_5582319.htm](http://www.gov.cn/shuju/2021-01/25/content_5582319.htm)).

Xie, Y., 2014, *Zhongguo minsheng fazhanbaogao 2014*, in Chinese, Peking University Press, Beijing.

Zhiyan Consulting, 2018, *2018 nian zhongguo pinduoduo shichangyonghu jizhongdu fenxi*, in Chinese.

(<https://www.chyxx.com/industry/201808/671375.html>)



## Chapter 5

# Building Global Brand Awareness for Vietnamese Agricultural Products and Economic Development

*Tran Dinh Lam*

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### 1. INTRODUCTION

Vietnamese agriculture has gained positive results in the course of transforming from a centrally planned economy to a free market. From a poor, destitute country, Vietnam has become a major agricultural exporter. The transition period, however, was not a straightforward path without ups and downs. Long-standing conflict between progressive thinkers (both officials and farmers) and conservatives continued for a long time, with reformists emerging victorious thanks to their persistence, followed by the disbanding of cooperatives and the return of land to farmers. The same can be said about Japan, which underwent successful agrarian reform after World War II and ultimately guaranteed equality for all farmers (Kawagoe, 1990). Agrarian reform is also a topic of focus in Ruttan's research (1964) concerning land reform in the Philippines that also established equality for farmers.

The 'contractual system', which introduced the 'land-to-the-farmer' policy in Vinh Phuc province, was only accepted by the central government after 21 years of illicit implementation followed by strong objections. Only when the country was in a dire predicament was Directive 100, and later Resolution 10, proposed, "recognizing the long-term existence and positive impacts of individual economy". Nevertheless, changes were made, and things were different after the reform, all of which could be attributed to the 'disruptive minds' at Vinh Phuc province. It was also this place that gave rise to the 'branding mindset' with the contractual system as its flagship product.

As Vietnam has introduced more policies liberalizing foreign trade, branding activities should be a focus for businesses operating in the agriculture sector, to drive brand awareness in the domestic market and to export to foreign countries. Despite efforts, a global brand for Vietnamese agricultural products is still in nascent development due to deep-rooted influences with both cultural and political aspects, and to unwillingness to change from leadership's prior vision. It is imperative for Vietnam to learn from foreign investors about management methods that place sustainable and high-quality agriculture as the ultimate goal.

This paper is structured into 4 parts. The first part is the introduction, providing a basic overview of the paper. The second part discusses the topic of building global awareness for Vietnamese agricultural products, which is critical to establishing trust in consumers, increasing value, and exporting more to international markets; new models for organic product export will also be briefly introduced in this section. The third part sheds light on the importance of government in the integration process. Proactive actions from the government, such as easing legal constraints, providing a healthy business environment, eliminating bureaucracy, and investing in infrastructure to facilitate trade, are very important. The final section is the conclusion, where synchronous changes are proposed to build and develop Vietnam's rural areas, allowing dedicated businesses to play a decisive role to raise brand awareness of Vietnamese agricultural products in the international market.

## **2. BUILDING A GLOBAL BRAND FOR VIETNAMESE AGRICULTURAL PRODUCTS**

### ***2.1. The Centralized Agricultural Model***

After its unification in 1975, Vietnam adopted a centrally planned economy. The reason for this adoption was mainly because of the historical context at that time, as Vietnam had just won its unification war thanks to the support of the

Socialist Republic's ideology. It was natural for Vietnam to follow a central planning model, as its leaders believed such a model would continue to bring success to the country during the reconstruction period.

A centrally planned economy is implemented using two important principles: (1) Nationalization in the form of state-owned and collective-owned land and resources and (2) all economic activities are centrally planned, which means that there will be no free market.

Documents presented at the 24th Plenum in September 1975 listed land as an asset to be controlled by the cooperatives and specified that all agricultural import and export would be under government monopoly. This model was expected to bring about positive changes to people's lives and revive the damaged economy after the two wars. The Fourth National Congress of the Communist Party proposed an industrialization plan covering the next 15 years to catch up with other industrialized countries.

## ***2.2. Driving Forces for Changes in Vietnamese Agriculture***

As opposed to the prospects proposed at the 4<sup>th</sup> National Congress, reality presented an entirely different picture. At the end of 1980, none of the targets of the Five-Year Plan (1976 – 1980) were met. Average annual GDP growth had been expected to be 13-14%, while actual growth came in at 0.4%. Agricultural production was 2% per annum instead of the planned target of 6%. Poor management of the cooperative model had caused a decrease in production. It also de-incentivized farmers. In addition, food prices imposed by the government were too low and not reflective of the true value of food, making food scarcity a widespread situation throughout the north. Famine was regular despite annual rice imports. Around 9.3 million people in the 21 provinces of the north were ravaged by hunger. Households below the poverty threshold reached a record high of 75% of the population (Dang Kim Son, 2020).

### ***2.3. Agricultural Breakthroughs by Individuals and Local Authorities in Northern Vietnam***

The cooperative model was criticized as ineffective at the Doan Xa Commune, Hai Phong. Beginning in 1962, local leaders decided to implement another production method, called the “contractual system”, which was deemed illegal and considered a “seed of capitalism” by the central government (Dang Phong, 2015, author’s translation).

In December 1968, the central government officially ended all agricultural activities conducted with this method. They pronounced that the method had created discrepancies between households and promoted an individual economy instead of a collective one. Most importantly, it ran counter to the direction of the Vietnamese Communist Party. However, the system was still secretly implemented in several places, notably Hai Phong and Vinh Phuc provinces.

At Doan Xa Commune, Hai Phong province, the Tien Lap cooperative decided to implement the contractual system for households after a consensus from most cooperative members in 1974. According to the new method, a member would receive one rice field (360m<sup>2</sup>) and return 70kg of rice as a “land tax” to the cooperative. After adoption, production doubled to 140 – 150 kg per field compared to 60 – 70 kg under the old system. People then had more than enough to eat, and public confidence was restored.

Given these positive results, leaders of Hai Phong province proposed expansion of the system to the central government, but to no avail. Central leadership expressed doubt and deemed the contractual system a “double-edged blade”. As a result, the new system was continued illicitly. It was publicly adopted in Vinh Phuc province four years later, but met with strong criticism and became almost taboo (Dang Phong, 2015, author’s translation).

Cooperatives in Vinh Phuc province used to own 100% of both lands and agricultural products and made “payment” to farmers at 1kg of food/month/person, which was extremely low at the time. But things changed in 1966 when the Provincial Party Secretary, Mr. Kim Ngoc, took over

administrative tasks. He officially implemented the contractual system, and the result was drastic: 5% of farming land produced 60% of income for farmers (National Political Publishing House, 1975). The system was then piloted in several districts in the province from 1963 – 1965, and all produced favorable outcomes in the first pilot period in terms of both farming and ranching: improved productivity, higher morale and income, and easier management. The work of the agricultural cycle, from cultivating the land to harvesting the crops, was done entirely by the farmers. Farmers were now responsible for their lands and their end-use products, thus incentivizing them and ultimately boosting production. The system was later widely accepted and became a movement throughout the province.

Kim Ngoc's methodology was strongly criticized by the central authority. "Vinh Phuc province has run in the opposite direction of the cooperative model" and "Mr. Kim Ngoc diverged to capitalism" were the common criticisms at the time. Nevertheless, the contractual system was able to fully utilize labor forces as it empowered and elevated farmers to positions of ownership of their lands and farm tools and limited administrative bureaucracy in agricultural cooperatives. The achievements of Vinh Phuc were recognized by many newspapers, as most of the Northern provinces were facing the same issue with the cooperative model (although not many places dared to change production methods publicly). Farmers and officials were secretly dispatched to Vinh Phuc to learn this production method.

By 1977, the economy in most Northern provinces was in crisis except for Hai Phong and Vinh Phuc. Post-1968 agricultural reforms implemented in other provinces hadn't improved the situation, but rather had made food scarcity an even worse issue. Subsidies from the government were exhaustive, as the agricultural cooperative model gradually showed signs of bureaucratic sclerosis and ineffectiveness. Cooperatives were not able to meet food production targets and even asked for subsidies. Farmers, those who were supposed to produce food, were faced with famine. Famine was widespread. Farmers had left the cooperatives and scattered everywhere to work as wage earners.

It was a completely different story in the two places where the contractual system was implemented. Doan Xa's crop yield in 1977 actually increased by 6 times the average, 36 times compared to that of the previous Winter-Spring crop season. Targets such as taxes and obligatory production amounts were met early. Farmers were cheerful and optimistic. In the 1978 Winter-Spring crop season, Doan Xa commune was able to purchase additional farm tools. Land utilization was also improved as farmers in the commune started to expand their cultivated fields to other areas (Dang Phong, 2015).

These impressive results were recorded in the reports of Hai Phong leadership and submitted to the central government at Hanoi. Kien An district (also within Hai Phong province) had also adopted the contractual system in secret. "Before implementing the new method, the agricultural output of the entire district reached 1600kg/ha in the 1980 Spring-Summer crop season. The output then rose to 2500kg/ha after the method was put into operation, with some places, such as Truong Son cooperative (Kien An), peaking at 4000kg/ha" (Nguyen Van Tuat, 2002).

#### ***2.4. Collective Agriculture and Breakthroughs in Southern Vietnam***

Due to fundamental differences in both ideology and economic systems between Northern and Southern Vietnam, with the North following a centrally planned economy and the South pursuing a free market, at the 24<sup>th</sup> Plenum, the central government decided to reform the entire Southern agricultural model using a socialist-oriented approach (Central Committee of the Communist Party of Vietnam, 1975). In November 1978, the Politburo issued Directive 57-CT/TW on "Eliminating feudal exploitation and promoting collective ownership in the form of cooperatives to boost agricultural reforms following a socialist-oriented approach for Southern provinces" (Political Bureau, 1978)

From October 1978, most Southern provinces started to establish state-owned corporations and cooperatives on a large scale, following the policy of the central government. Unlike the north, the policy was coerced and met with objections from many local authorities. Nonetheless, collective agriculture was implemented, and farmers were forced to join the cooperatives out of fear of

retribution. Many places even adopted capital punishment and re-education camps for indoctrination purposes (Pham Hung, 1979).

By 1985, the cooperative model had been implemented for most of the southern regions, but many disadvantages and problems remained. Local authorities all admitted that the model was effective only in theory and had huge underlying issues. In An Giang province, agricultural production during the 1981 – 1986 period decreased to 1/3 of that of the 1976 – 1980 period. The same was true for all the other southern provinces.

### **- Breakthroughs in Southern Vietnam**

After a short period of time, many localities in the Southern region, among them An Giang province, started to find ways to resolve this bottleneck. Leaders in this province identified the root causes of the crisis and traced them back to the agricultural cooperative. "... the most reasonable cause for this situation and the bottleneck that needs to be relieved right now is the ineffective management mechanism for production corporations and cooperatives" (Long An People's Committee, 1980)

In October 1986, An Giang province finished assessing the situation and proposed policies to relieve bottlenecks in the agricultural system during the National Congress. In the proposal, agriculture was positioned as a frontier for change, and farming households were to be the spearhead to spur change during the innovation process. The concept was accepted, but one remaining issue needed to be resolved before it could be implemented: land ownership.

In essence, the decision to return ownership of lands and farm tools to farming households required dissolution of state-owned corporations and cooperatives. In 1987, provincial leadership officially issued a Resolution on returning farm land and uncultivated mountain land to farming households, erasing the notion of farming on another person's land and adopting a land distribution approach based on the availability of farm tools and the productivity of each household. In early 1988, based on the "land to the tiller" distribution policy, the An Giang provincial authority proceeded to distribute

lands to farmers for the long term, along with rights to transfer land and inherit crop yields, relieving bottlenecks found during the agricultural innovation process on the basis of mutual agreement among farmers. The local authority also issued a long-term land-use certificate to farmers.

Reality had proved that household-owned agricultural activity is the optimal approach to achieve the goal of “Rich people, strong nation”. The household is the basic unit of production, and the best way to achieve several targets, such as agricultural development, granting benefits and assurances to farmers, and accomplishing the transformation from a poor, backward rural area to a wealthy and civilized area.

#### **- “Contractual system 10” (or Resolution 10) in agriculture**

After site inspections in Northern and Southern regions, the Politburo of the Communist Party of Vietnam issued Resolution 10-NQ/TW on innovating the contractual system in agriculture. The Politburo admitted mistakes and problems in the cooperative model, specifically “over-optimism, hastiness in reform implementation, farmer coercion into the cooperatives, model scaling before meeting qualified conditions” (Political Bureau, 1988)

From there, the Politburo continued to advocate transformation to a new agricultural model in which households were the basic self-owned production unit, and cooperatives were voluntary, focusing mostly on logistical services, supply, and product consumption. This household-oriented approach gave farmers direct ownership of their agricultural production and the ability to choose the most appropriate production methods. In addition to taxes, all products would be traded on the principle of amicable sales. Farming households also had the right to acquire new materials and freely export their own excess products.

In Resolution 10, the Government publicly announced for the first time that they:



“Recognize the existence and positive impacts of the individual economy to the process of transitioning to a socialist republic, admit the legal entity of such production units, ensure equality in terms of benefits and obligations before the law, ensure the appropriate business rights and income for an individual entity.”

The government also encouraged individuals to make investments to expand their production. Resolution 10 of Politburo in 1988 was a major leap from Directive 100 in 1981 in the following areas: Farmers could own land and farm tools and become more active in both the production and consumption stages. Trade would be facilitated per mutual agreement among parties without any imposed price or quantity. This gave a huge boost to agricultural production, transforming all of Vietnamese agriculture in a rapid manner, but especially the food production industry, where Vietnam went from a famine-ravaged country to a major rice exporter.

Resolution 10 revolutionized agricultural production and management throughout the country, helping Vietnam ensure its food supply for the whole country in 1989. In the next year, the agricultural industry took a new turn, and Vietnam exported rice for the first time. From there, rice exports continued to rise, and Vietnam has become one of the top rice exporters in the world. Despite Covid-19, the agriculture sector still played a vital role in supporting other sectors, with a 3.32% increase in growth in the third quarter of 2021. According to research by Matty Demont and Pieter Rutsaert (2017), despite now being a top rice exporter, Vietnam still needs to restructure its agriculture sector and improve sustainability in its value chain.

### ***2.5. Raising Awareness of Vietnamese Agricultural Brands***

Vietnamese people haven't prepared well enough to build awareness of their brand, partially due to cultural and political influences of Confucianism, specifically its social structure of “four occupations,” in which merchants and traders are placed at the bottom of the social hierarchy with intelligentsia (former scholars in feudal society) at the top, followed by farmers and then industrial workers (formerly artisans & craftsmen). In addition, the centrally planned economy that was adopted made the situation worse for the agricultural

sector, as it de-incentivized farmers and focused mostly on production quantity instead of quality. “Pricing mechanisms imposed by the government were ineffective and not reflective of the true value of products. Prices no longer became an instrument to determine supply, distribution. This obstructed and deterred production and trading” (Tran Dinh Van, 1985). Rice prices imposed by the government and free-market prices differed by a factor of 14.

Prolonged famine was another factor that held off efforts to create brand awareness. It was only in 1986 that the seeds of brand awareness appeared, when the “Doi Moi” reform, liberalizing private production and international trade, was introduced. At Ho Chi Minh City, “the business model of the Vietnam Food Corporation was the first attack on the bureaucratic cooperative model, heralding the transition from a self-sufficient economy to a socialist-oriented market one” (Ban tuyen giao tinh uy Cuu Long, 1992). Particularly, Vietnam's agricultural products started to gain attention when the price of rice was restored to its true value, which helped stimulate trading. The government's agency in charge of food management then bought rice at the market price from farmers in the Mekong Delta region.

Brand awareness for products such as sugar and peanuts also started to bloom within An Giang province when the local authority removed the policy of extremely low selling and purchasing prices. Before the policy was removed, sugar and peanuts were produced in abundant quantities but could not be sold due to an extremely low price set by the purchasing party. Once prices were set based on market conditions, sales of those products doubled in the following year.

## ***2.6. Vietnam's Agricultural Brands after the Economic Reform in 1986***

After the re-education of the bourgeois in 1959, the government in Northern Vietnam monopolized agricultural exports and imports. Goods were only traded to other countries within the socialist bloc, making brand creation non-existent in the North. It was only with economic reform in 1987 that the private sector was allowed to participate in economic activities, boosting market demand and building Vietnam's nascent brand awareness.

From 1980, merchants and traders in Ho Chi Minh City contacted their relatives in Hong Kong and Singapore to exchange agricultural goods for production materials such as tobacco leaf, textile yarn, and petroleum, but all these activities were illegal and were conducted illicitly at Buoy no. 0 on the sea. On December 29, 1987, Vietnam passed the Law on Foreign Investment, which allowed foreign businesses to operate on Vietnamese territory, boosting innovation and efforts to create brand awareness for Vietnamese agricultural products. This decision opened up new opportunities for domestic businesses to attract capital investment, acquire technologies and talent, and learn from the experiences of FDI businesses to promote Vietnam's agricultural products to the outside world.

One successful case of a Vietnamese product successfully introduced to foreign markets is Trung Nguyen Coffee. Toshihiko Mizuno promoted this brand in Japan, as he also owned a Japanese coffee shop under this brand name (Tran Dinh Lam, 2002). After successful franchising in Japan and Singapore in 2001, Trung Nguyen Coffee now exports its products to over 60 countries around the globe. It provides a sterling example of the quality of Vietnamese products and Vietnam's capability to build distinctive brands that can compete in international markets.

Another success story is Vinamit Organic Farm. The business model was first introduced in 1991 and has been successful in producing internationally recognized dried products thanks to investment in modern technologies and lessons learned from foreign businesses. The company's annual growth rate was around 35% in 2014 and export products accounted for 60% of total revenue. Currently, Vinamit owns around 150ha with over 54 plant varieties certified as organic products by the USDA (Koji Domon, TDLam, Simrit Kaur, 2021). In 2020, Vinamit's sugar-cane juice and freeze-dried sugarcane juice were issued patents by the United States Patent and Trademark Office (USPTO) for the US market. Vinamit's example has helped to boost the confidence of young scientists and businessmen in Vietnam to research and develop new technologies.

Mr. Huy, owner of HLA Company Limited, was once a normal farmer who renovated his business by inviting Philippine experts to provide technical consultation to improve banana quality and build the-now-internationally-recognized brand FOHLA. As a result, banana quality improved, and export volume increased. To strengthen the FOHLA brand, he also invited Japanese experts to train the company's employees and provide technical support. Mr. Huy now owns around 1,300ha of cultivated land, 30,000 cows, 100ha for shrimp farming (the shrimp food is self-produced), and 200ha of land for cultivating banana and other fruit trees. He was granted the "Proud to be Vietnamese Farmer 2017" honor (Vo Quan Huy, interview by author, July 11, 2020).

Vien Phu Organic & Healthy Foods JSC offers a "new concept of rice" in which organic rice products reduce side effects such as obesity and diabetes due to a low-to-medium glycemic index and high fiber, high phytochemical contents. The company was the first organic company to be certified by both the EU and the USDA in 2014. It was also the first company to have its organic products appear in international markets. Vien Phu's Hoa Sua organic rice product is priced at USD 2300/ton and has been exported to many countries (Mr. Phuong – Manager of Vien Phu Company, interview by author, October 16, 2021).

During the process of integrating Vietnamese products with international markets, it's undeniable that experts and professionals play a crucial role in creating high quality, and thus it's of utmost importance to promote and develop the talents of each business, as these talents are the key to sustainable growth. Research on new rice varieties to improve crop yield has also been conducted by Vietnamese scientists. Organic rice varieties ST24 and ST25, which were honored as the best in the world at the Annual World's Best Rice Contest in Manila, the Philippines, in September 2019, signaled a huge leap in terms of scientific achievements for Vietnam. The event helped promote and cement the Vietnamese rice brand in the international markets (Vo Tong Xuan, 2021).

Along with internal forces that propelled Vietnamese brands, external support from benevolent foreign investors has been central to the sustainable development of the agriculture sector. Shiokawa Minoru from the Nico

NicoYasai company is a typical example. Coming to Vietnam with the wish of promoting organic agriculture in Vietnam, he engaged with local farmers to create an organic farmer network where everyone would meet, exchange, and learn from one another. He rented 5,000m<sup>2</sup> of land and started to grow his vegetables, providing around 100kg of fresh vegetables to Vietnamese consumers every day. When asked about his work and philosophy, he shared that “I feel much more happy living as one with nature and realizing my goals to protect the environment and the health of people.” (Le Phuong, 2013)

Though the roadmap for organic agriculture is an arduous path, Shiokawa has continued to follow it to bring healthy foods to consumers. He not only seeks to produce healthy vegetables, but also hopes that Vietnamese people will grow their own organic products. The Nico NicoYasai brand is trusted by many consumers and appears in many convenient stores, such as Family Marts in Ho Chi Minh City.

Shiokawa's efforts have inspired young Vietnamese to learn and create startups following an organic agriculture model. An example is the student majoring in tourism who created the Tam Viet rice brand, Vo Van Tieng. His natural farming method takes advantage of the natural ecosystem in which waste from animals such as fish and ducks is used as nutrient to grow crops. This farming model drew the attention of many students and scholars throughout the country to Dong Thap province, where they joined together to create the healthy, organic Tam Viet rice brand (Vo Van Tieng, interview by author, October 30, 2021). Although production following the model doesn't scale well, with production at 1.6-1.7 ton/ha, it has still been adopted by the H're ethnic group in Kontum province, and the nutrient values of the produced rice are high enough to help reduce the malnutrition rate in this region, setting this model and the Tam Viet brand apart from competitors.

### **3. THE ROLE OF GOVERNMENT IN PROMOTING VIETNAM AGRICULTURAL BRANDS**

Vietnam has gone through a centrally planned economy in which distribution must follow the government's directives and targets, rendering brand awareness

non-existent for a long time. The “Doi moi” reform helped breathe life into the stagnant economy and change the management model towards a more market-oriented way. Competition was allowed and land was returned to farmers, boosting production and trades. As a result, Vietnam was capable to provide food supply for the entire population and became one of the top rice exporters for many years. However, Vietnam still needs to continue making changes in terms of management mindset to fully unlock the potential of the whole country and sustainably promote the agricultural brands. Development should then focus on leveraging internal forces, training human capital, and researching innovative products. Sustainable development is the optimal way for Vietnam to integrate and create its brand image (Tran Dinh Lam, 2019).

Vietnam's government has started to realize the importance of geographical indications in doing business with foreign companies. According to the Intellectual Property Office of Vietnam, there are 22 submitted applications, and 21 geographical indications were granted in 2020. Most of the submitted applications are for fresh agricultural products, with few processed products. Efforts have also been made to facilitate application for geographical indications for businesses, with 88 out of 94 applications for geographical indications belonging to Vietnamese businesses, while the remaining 6 are foreign ones (Intellectual Property Office of Vietnam, 2020).

The EU-VN Free Trade Agreement, which takes effect from August 2020, is great support from the government as it helps protect 39 geographical indications of Vietnamese businesses and grants them tariff privileges upon exports to European countries. This further cements Vietnamese agricultural brands in international markets.

Agricultural brands can also be widely promoted if local governments advocate for sustainable agricultural projects. Attention to infrastructure development is another important aspect, as it drives trading activities. The Mekong Delta region, where agricultural production, especially rice, is second to none compared to other regions, is actually underdeveloped in terms of

infrastructure, deferring the sustainable path even after 35 years of the reform. (Le Tien Chau, interview by author, March 03, 2021).

In addition, collaboration between benevolent businessmen and farmers is key to promoting Vietnam agricultural brands, as farmers, despite knowing how to create good crops and varieties, lack the business capabilities to market their products effectively. Thus, it is important to develop collaborative models where those who share the same goals join hands. Lands will be managed by soil experts; products will be marketed by people with business acumen, and the production process will be overseen by farmers. This model calls for farmer-centered businesses that can build processing factories where experts with extensive experience in market conditions run the operations together with farmers. Policies such as tax incentives will then play a critical role in the success of this model. Changes in the legal framework, specifically the Land Law, so that it can further benefit farmers is another thing to be considered. Overall, the government needs to place greater emphasis on domestic businesses in rural areas, especially businesses that better the lives of farmers. As of now, FDI enterprises still enjoy more privileges than domestic enterprises in terms of tax exemptions and land taxes. A change in mindset in favor of internal forces should give farmers and local businesses a competitive edge in international markets.

Lastly, as of September 2021, the Covid-19 situation has forced over 1.3 million people, most of them originally farmers, to leave cities for their homes in rural and suburban areas. If local businesses had received attention much earlier, and branding activities had been carried out, farmers shouldn't have needed to leave their homes to come to the city looking for jobs in industrial factories in the first place. This further emphasizes the need to support local businesses in order to build strong brands, as this not only helps cement the overall Vietnamese image in international markets but also helps create a stable income for farmers.

#### **4. CONCLUSION**

Vietnam has successfully built its image as an emerging market after 35 years of economic reform in the Southeast Asia region. Disruptions coming from many creative individuals, together with the support of conservative people who nonetheless wanted changes, caused many significant improvements for Vietnam during its transformation process and positioned Vietnam as a country where high-quality agricultural products originate. Many Vietnamese brands have appeared and shown their ability to compete fairly and squarely with other organic, healthy products on foreign soil.

However, development is still not sustainable, as most farmers, who account for 60% of the population, are still struggling, though their contributions are crucial in creating Vietnamese brands. The Covid-19 situation has also put a spotlight on the disparity between FDI enterprises and local businesses owned by farmers, because most Covid-related government incentives targeted FDI enterprises instead of local ones. Improving the lives of farmers and owners of local businesses via brand building and product promotion is a key to helping Vietnam develop internal forces that can drive growth and reduce dependence on foreign investment.

Education should be the focal point in the development scheme, as it establishes realization of the importance and contributions of farmers in the course of promoting Vietnamese brands. A collaboration model involving businesses in production, consumption, and branding activities is the optimal path for long-term development. Synergy between education and a collaborative development model should create sustainable value for Vietnamese farmers.



## REFERENCES

- Ban tuyên giáo tỉnh ủy Cửu Long, 1992, “Chuyện kể về chị Ba Thị”.
- Central Committee of the Communist Party of Vietnam, 1975, “Resolution 24 on new missions of Vietnam during the new period”.
- Dang Kim Son, 2020, “Việt Nam hôm nay và ngày mai,” *Danang Publishing House*.
- Dang Phong, 2015, “Khoán hộ ở Hải Phòng, Phá rào trong đêm trước đổi mới,” *Tri Thuc Publishing House*, 134-171.
- Demont, Matty, and Pieter Rutsaert, 2017, "Restructuring the Vietnamese Rice Sector: Towards Increasing Sustainability," *Sustainability*, 9 (2), 325.  
(<https://doi.org/10.3390/su9020325>)
- Domon, K., Tran Dinh Lam, Simrit Kaur, 2021, “Quyền sở hữu trí tuệ ở các nước đang phát triển,” *VNU Publishing House*.
- Intellectual Property Office of Vietnam, 2020, *Annual Report 2020*.  
(<https://drive.google.com/file/d/1ss2Vui3F18MS5rnQAf9Ohr10UrCiTila/view>)
- Kawagoe, T., 1990, “Land reform in postwar Japan,” *The Japanese Experience of Economic Reforms*, Juro Teranishi (ed.). *St Martin's Press*, 178-204.
- Le Phuong, 2013, “Chàng kỹ sư Nhật đến Việt Nam làm nông dân”.  
(<https://vnexpress.net/chang-ky-su-nhat-den-viet-nam-lam-nong-dan-2908641.html>)
- “Lịch sử Đảng bộ tỉnh Vĩnh Phúc, 1954-1975”, 1995, *National Political Publishing House*, 2,124.
- Long An People's Committee, 1980, “Decision no. 602/UB regarding the return of equipment to farmers that were once expropriated by cooperatives”.
- Nguyen Van Tuat, 2002, “Khoán sản phẩm nông nghiệp ở Kiên An ngày ấy,” *Hai Phong Publishing House*, 34.
- Pham Hung, 1979, "On food production," *Prime Minister's Speech*. Political Bureau, 1978, Directive 57 CT/TW regarding the "accelerating agricultural reform in Southern Vietnam".
- Political Bureau, 1988, “Resolution no. 10-NQ/TW on changes in agricultural management”.

- Ruttan, V. W., 1966, “Equity and productivity issues in modern agrarian reform legislation,” *Philippine Studies*, 14 (1), 52–64.
- Tran Dinh Van, 1985, “Từ thí điểm Long An,” *Nhan Dan Newspaper*.
- Tran Dinh Lam, 2002, “Cà phê Trung Nguyên giữa lòng Tokyo,” *Saigon Times*.
- Tran Dinh Lam, 2019, “Economic Reform and Sustainable Development in Vietnam,” *Brill publishers*.
- Vo Tong Xuan, 2021, “Cần có thương hiệu quốc gia cho gạo Việt,” *Kinhhtedothi newspaper*.  
(<https://kinhhtedothi.vn/giao-su-vo-tong-xuan-can-co-thuong-hieu-quoc-gia-cho-gao-viet-416785.html>)

# **LAW AND ECONOMICS ON ILLEGAL TRADES**

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**VIETNAM NATIONAL UNIVERSITY – HO CHI MINH CITY PRESS**

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Website: [www.vnuhcmpress.edu.vn](http://www.vnuhcmpress.edu.vn)

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and Humanities, 10-12 Dinh Tien Hoang  
Street, Ben Nghe Ward, District 1,  
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**Publication Director**

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1<sup>st</sup> Edition. Quantity: 150 copies, Size: 18.2 x 25.7 cm. Registration Number of Publication Plan: 160-2022/CXBIPH/17-01/ĐHQGTPHCM. Publication Decision Number 11/QĐ-NXB by VNU-HCM Press issued on 09/02/2022. Printed by: Song Nguyen Printing One Member Co., Ltd. Address: 931/10 Huong Lo 2, Quarter 8, Binh Tri Dong A Ward, Binh Tan District, HCMC. Legal deposit in 2021. ISBN: **978-604-73-8828-8**.

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